



FRIDAY, AUGUST 27.

Train Accidents in July.

The following accidents are included in our record for the month of July:

COLLISIONS.

REAR.

1st, very early, freight on Pennsylvania Railroad ran into rear of switching freight in Newark, N. J., wrecking two cars.

1st, a. m., freight on Savannah, Florida & Western broke in two near Blackshear, Ga., and rear section ran into forward one, wrecking 2 cars.

1st, a. m., freight on Pennsylvania Railroad ran into rear of passenger train stopped near Fish House, N. J., by burst brake hose, wrecking rear car, injuring trainman and 9 passengers slightly.

2d, a. m., passenger train on Michigan & Ohio ran into rear of freight near Hanover, Mich., wrecking the caboose.

2d, a. m., freight on Missouri, Kansas & Texas ran into rear of passenger train stopping at Reams, Ind. Ter., wrecking 1 car.

3d, p. m., passenger train on Philadelphia & Reading ran over a misplaced switch and into coal train on siding at Tamaqua, Pa., wrecking both engines and several cars. Three trainmen and 1 passenger were badly, and 3 passengers slightly hurt.

7th, a. m., passenger train on Fitchburg road ran into a coal car which had blown out on siding on the main line near Worcester, Mass., damaging engine and car.

7th, noon, coal train on Philadelphia & Reading ran into preceding coal train at West Conshohocken, wrecking 20 cars.

8th, p. m., freight on New York, New Haven & Hartford ran into rear of passenger train which had been stopped at Green's Farm, Conn., by the slipping of an eccentric on the engine. A car was damaged and a trainman slightly hurt. The passenger train had sent back a flag, but the man did not go far enough.

10th, night, passenger train on Northern Pacific ran into rear of freight, which had stopped for water at Garrison, Mont., wrecking 3 cars.

11th, a. m., passenger train on New York, Pennsylvania & Ohio ran over misplaced switch and into freight on siding in Youngstown, O., wrecking engine and 9 cars and injuring 3 trainmen.

11th, p. m., freight on Norfolk & Western ran into rear of preceding freight at High Bridge, Va., and wrecked one car.

16th, night, freight on Chicago, Milwaukee & St. Paul ran into preceding freight at Lanark Junction, Ill., wrecking 5 cars and killing tramp stealing a ride. No signals.

16th, very early, freight on Boston & Lowell broke in two near Boston, Mass., and rear section ran into forward one, wrecking several cars. Two cars were thrown over against a small house standing close by the track, breaking in one side of it and injuring 2 people who were asleep in their beds.

17th, a. m., passenger train on Evansville & Terre Haute ran over misplaced switch and into freight standing on a siding in Vincennes, Ind., damaging 2 cars.

19th, a. m., passenger train on Grand Trunk ran into cars broken loose from a freight at Strathroy, Ont., wrecking several cars and injuring 2 trainmen.

19th, night, freight on Chicago, Rock Island & Pacific ran into preceding freight near Englewood, Ill., damaging locomotive and several cars.

20th, a. m., construction train on Geneva, Ithaca & Sayre ran into rear of coal train near Spencer, N. Y., damaging several cars.

21st, a. m., freight on Gulf, Colorado & Santa Fe broke in two near Brownwood, Tex., and the rear section ran into forward one, wrecking several cars.

21st, a. m., freight on Cincinnati, Wabash & Michigan ran over a misplaced switch and into freight on siding at New Paris, Ind., damaging several cars.

22d, a. m., passenger train on Wabash, St. Louis & Pacific ran into rear of freight which had stopped at Kokomo, Ind., damaging several cars and injuring 4 trainmen slightly.

26th, a. m., passenger train on Pittsburgh, Ft. Wayne & Chicago ran over a misplaced switch and into freight on a siding in Valparaiso, Ind., wrecking engine and several cars and killing an engineer.

23d, night, passenger train on Florida Railway and Navigation Co. ran into rear of local passenger train stopped at Hart's Road, Fla. Brakeman slightly hurt.

27th, a. m., freight on Baltimore & Ohio broke in two near Mt. Airy, Md., and rear section ran back down grade and into a following freight, wrecking engine and several cars.

29th, p. m., passenger train on Boston & Maine ran into preceding passenger train at Medford, Mass., damaging a car.

30th, a. m., circus train on Intercolonial road broke in two near River Philip, N. S., and rear section ran into forward one, wrecking two cars and injuring a circus man.

31st, night, freight on New York, Erie & Western ran into rear of passenger train stopping at Turners, N. Y., damaging a car. Engineer was hurt.

BUTTING.

5th, a. m., car broke loose from freight on Baltimore & Ohio at Cameron, W. Va., and ran back down grade and into the head of following freight, damaging the engine and injuring the engineer and fireman slightly.

8th, a. m., butting collision between two freights on Michigan Central near Bay City, Mich., wrecked both engines and injured a fireman fatally.

13th, night, butting collision between two freights on Norfolk & Western near Blackstone, Va., damaged both engines and 10 cars and injured a fireman. The trains had orders to meet at Blackstone, but one of the conductors failed to comply with them.

15th, night, butting collision between freight and passenger train on Pennsylvania Railroad near Bordentown, Pa., damaged both engines and several cars. A passenger was slightly hurt.

30th, p. m., butting collision between passenger and wild engine on Louisville & Nashville near Duck River, Tenn., wrecked both engines and several cars. Seven trainmen and 2 passengers were hurt. The collision occurred in a deep cut, making a very bad wreck to clear away. The wild engine was running on the passenger's time.

20th, a. m., butting collision between passenger and gravel train on New York, New Haven & Hartford in Bridgeport, Conn., wrecked both engines and 6 flat cars. Two laborers on the gravel train were killed and 2 others fatally hurt. The engineer and 3 laborers were badly injured. At the point where the collision occurred the road has only a single track for about one-eighth of a mile. It is charged that the signal was set to stop the express train, but the engineer failed to regard it.

23d, night, butting collision between two freights on Pittsburgh, Cincinnati & St. Louis, near Fernwood, O., wrecked both engines and several cars and injured 5 trainmen. The collision was caused by a conductor mistaking an order to meet the other train at Fernwood.

30th, p. m., butting collision between passenger and wild engine on Union Pacific near Utah, damaged 3 engines and 2 cars.

CROSSING.

21st, night, Wabash, St. Louis & Pacific freight ran into Belt Line freight at the crossing in Indianapolis, Ind., damaging several cars and injuring brakeman.

24th, a. m., passenger train on Jacksonville Southeastern ran into Chicago & Alton passenger train at the crossing in Girard, Ill., damaging both engines.

24th, a. m., switching freight on New York, Susquehanna & Western ran into freight on New York, Lake Erie & Western at the crossing in Middletown, N. Y., damaging several cars.

DERAILMENTS.

BROKEN FROG.

5th, a. m., freight on Chicago & Northwestern was derailed near Evanston, Ill., by broken frog.

BROKEN BRIDGE.

27th, a. m., passenger train on Toledo, Peoria & Western went through a bridge near Burnside, Ill., and the engine and 2 cars went down 20 ft. into Crooked Creek. Four trainmen were badly, and 6 passengers slightly hurt. The bridge was a wooden truss bridge, about 40 ft. long, and, it appears, had caught fire the night before, probably from a spark from a locomotive, and the timbers had been nearly burned through. It is said that a farmer living close to the bridge saw the fire, but thought it was not necessary to notify anyone until the next morning.

30th, a. m., freight on Toledo, St. Louis & Kansas City broke through bridge at Bluffton, Ind. The engine and 6 cars went down into the Wabash River. Three trainmen and a tramp were killed and 1 trainman badly hurt.

SPREADING OF RAILS.

6th, a. m., 2 cars of freight on Chicago, Rock Island & Pacific were derailed near Platte City, Mo., by spreading of the rails.

12th, a. m., engine of passenger train on Utah & Northern was derailed near Garrison, Mont., by spreading of the rails.

16th, a. m., freight on Augusta, Gibson & Sandersville was derailed near Hepsibah, Ga., by spreading of the rails. A passenger in the caboose was slightly hurt.

16th, a. m., passenger train on Chicago & St. Louis was derailed near Streator, Ill., by spreading of the rails.

27th, a. m., freight on Grand Southern was derailed near St. Stephens, N. B., by spreading of the rails.

27th, p. m., passenger train on Intercolonial & Great Northern was derailed near Taylor, Tex., by spreading of the rails.

28th, a. m., engine of passenger train on Chicago, Rock Island & Pacific was derailed near De Soto, Ia., by spreading of the rails.

29th, a. m., passenger train on Louisville, Evansville & St. Louis was derailed near Fairfield, Ill., by spreading of the rails. The fireman jumped and was badly hurt.

BROKEN WHEEL.

19th, night, freight on New York, Lake Erie & Western was derailed near Burns, N. Y., by broken wheel.

28th, a. m., passenger train on Grand Southern was derailed near St. George, N. B., by broken wheel.

27th, night, freight on Louisville & Nashville was derailed near Spring, Ky., by broken wheel. A trainman was hurt.

30th, p. m., freight on Philadelphia & Reading was derailed near Harrisburg, Pa., by a broken wheel and went down a high bank. The engineer was killed and fireman badly hurt.

BROKEN AXLE.

6th, a. m., freight on Chicago, Milwaukee & St. Paul was derailed by a broken axle, just as it was going on a bridge near Aberdeen, Dak. The engine and 9 cars went off the bridge and into the creek below. A trainman was hurt.

8th, a. m., car of freight on Delaware & Hudson Canal Co. road was derailed near Saratoga, N. Y., by broken axle.

16th, very early, circus train on Maine Central was derailed near Vassalboro, Me., by breaking of an axle. Five cars were wrecked, killing a number of horses. Two circus men and a trainman were hurt.

17th, p. m., freight on Toledo, Columbus & Southern was derailed near Findlay, O., by broken axle.

19th, a. m., freight on Toledo, St. Louis & Kansas City was derailed near Toledo, O., by broken axle.

20th, very early, circus train on New Brunswick Railway was derailed near Houlton, Me., by breaking of an axle.

26th, a. m., freight on Louisville, New Albany & Chicago was derailed near Wilson, Ind., by broken axle.

BROKEN TRUCK.

20th, a. m., freight on Central of Georgia was derailed near Rutland, Ga., by the breaking of a truck on a car loaded with watermelons.

CATTLE ON TRACK.

6th, very early, freight on New York City & Northern ran over a horse near Amawalk, N. Y., and engine and 4 cars derailed. The engineer was scalded to death and the fireman badly hurt.

6th, a. m., freight on Grand Trunk ran over a cow near Omenee, Ont. and engine and 8 cars were wrecked, killing a brakeman and injuring the fireman.

19th, a. m., passenger train on Wheeling & Lake Erie ran over a cow near Ironville, O., and the whole train was derailed.

20th, a. m., passenger train on Cincinnati, Hamilton & Dayton ran over some cows near Leipsig, O., and the whole train was derailed.

30th, night, passenger train on Missouri Pacific ran over a horse near Lexington, Mo., and engine was derailed and upset, killing the fireman and injuring the engineer.

31st, night, freight on Grand Trunk ran over a cow near Iroquois, Que., and engine and 9 cars were derailed. Fireman was hurt.

LAND-SLIDES AND WASH-OUTS.

18th, p. m., freight on Central Pacific ran into a land-slide near Golconda, Nev., wrecking engine and 3 cars.

21st, night, freight on Atchison, Topeka & Santa Fe ran into a wash-out near San Marcial, N. M., and the engine and 10 cars were wrecked, killing 2 trainmen and injuring another.

30th, night, passenger train on Philadelphia & Reading ran into wash-out at Derry, Pa., wrecking engine, killing engineer and injuring fireman.

MISPLACED SWITCH.

1st, a. m., passenger train on New York, Lake Erie & Western was derailed near Susquehanna, Pa., by a misplaced switch. The helper engine, which was in front, was upset, and the regular engine of the train ran over it, and both were badly damaged. Engineer and fireman were hurt.

18th, night, freight on Buffalo, New York & Philadelphia was derailed at Nunda Junction, N. Y., by misplaced switch.

25th, night, passenger train on New York, Lake Erie & Western was derailed at Andover, N. Y., by a misplaced

switch. The engine upset, injuring engineer and fireman slightly.

30th, night, freight on Missouri, Kansas & Texas was derailed near Walker, Kan., by a misplaced switch.

RAIL REMOVED FOR REPAIRS.

5th, p. m., freight on Cairo, Vincennes & Chicago was derailed near Paris, Ill., where sectionmen had taken out a rail for repairs and neglected to put out a signal. The fireman was fatally hurt.

MALICIOUSLY CAUSED.

1st, very early, passenger train on International & Great Northern was derailed near Trinity, Tex., by some ties which had been piled upon the track.

11th, a. m., two freight trains on Lake Shore & Michigan Southern were derailed in Chicago by switches which were purposely misplaced, it is thought by strikers.

27th, a. m., passenger train on Oregon Pacific was derailed near Yaquina, Or., by a rail which had been placed on the track.

UNEXPLAINED.

1st, p. m., 6 cars of freight on New York, Lake Erie & Western were derailed near Great Bend, N. Y., and wrecked.

5th, a. m., freight on East & West of Alabama was derailed near Cedartown, Ga. Two trainmen hurt.

8th, a. m., 3 cars of freight on Connecticut River road were derailed in Springfield, Mass. Brakeman hurt.

14th, p. m., coal train on Chesapeake & Ohio was derailed near Hawk's Nest, W. Va., and went 60 ft. down a bank, killing 3 men who were riding on the train, injuring another and 3 trainmen.

16th, night, freight on New York Central & Hudson River was derailed in Rochester, N. Y.

17th, very early, car of circus train on Norwich & Worcester was derailed in Worcester, Mass., wrecking a car and killing a circus driver.

23d, a. m., passenger train on Atlantic & Danville was derailed near Waverly, Va., and baggage car wrecked.

27th, a. m., freight on Canadian Pacific was derailed near Owen Sound, Ont., and 10 cars were wrecked.

OTHER ACCIDENTS.

BROKEN PARALLEL ROD.

10th, a. m., engine of passenger train on Wilmington & Weldon broke a parallel-rod when near Pleasant Hill, N. C., and the loose end tore a large hole in the boiler. The engineer was very badly scalded, but succeeded in stopping the train.

MISCELLANEOUS.

7th, a. m., as a freight and a passenger train on New York, Lake Erie & Western were passing on double track Elmira, N. Y., a loose door on a freight car swung out and struck the passenger train, smashing one side of a car and breaking a number of windows.

21st, night, car loaded with tow in freight on New York, Lake Erie & Western caught fire when near Kirkwood, N. Y., and was destroyed.

23d, night, car of freight on Missouri, Kansas & Texas caught fire when near Reams, Ind. Ter., and was destroyed.

SUMMARY.

This is a total of 91 accidents, in which 23 persons were killed and 88 injured. As compared with July, 1885, there was an increase of 15 accidents; a decrease of 5 killed and an increase of 13 injured.

The seven months of the current year to the end of July show a total of 593 accidents, 213 killed and 827 hurt; a monthly average of 85 accidents, 30 killed and 118 injured.

A fuller statement of the totals and averages, with a summary of the causes of accident, will be found on another page.

Burlington Brake Tests—Service Run Down Hill of American Brake.

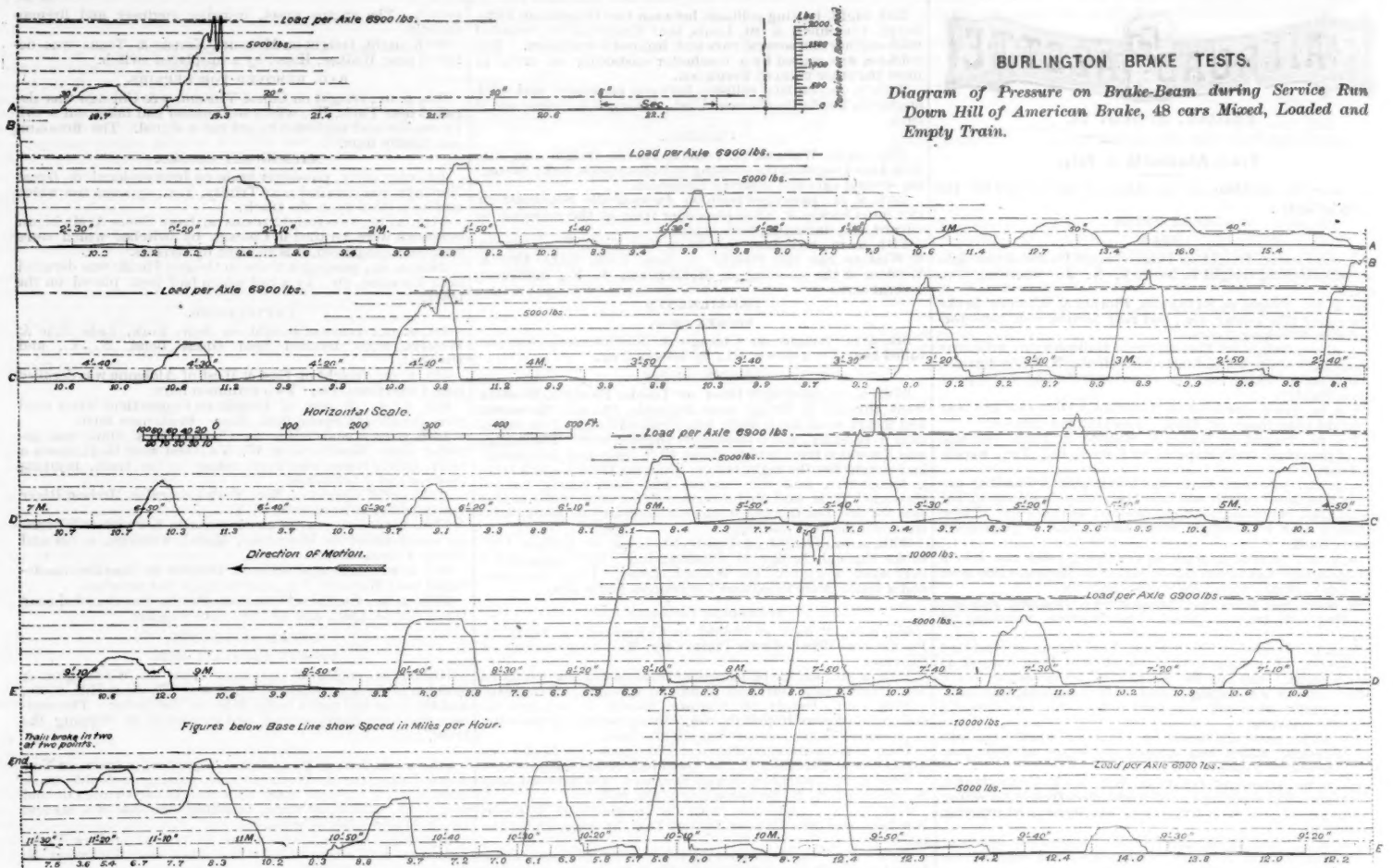
The accompanying diagram shows the fluctuations in the pressure on the brake-beam of the middle car of the 48-car train, mixed, loaded and empty cars, during the test of the American brake in what was known as the "service run down hill," which was to strike a point 500 ft. back of the top of a 1 per cent. (55 ft. per mile) grade at as nearly as possible 20 miles per hour, reduce to 15 miles per hour as near the top of the grade as possible, and hold that speed during a run of about two miles.

In this test the American brake made its worst record; and it was certainly very bad indeed. It was described in full in our issue of Aug. 6, and in our issue of Aug. 13 we gave a speed diagram showing the fluctuations of speed in the best test of each of the three trains tested, the American, Eames, and Westinghouse. The diagram we now give explains the sharp irregularities in the speed which were shown in the former diagram, and also indicates the cause of the severe shocks at the rear end of the train described in our issue of Aug. 6.

In our issue of Aug. 13 we gave the following details of the American run, the salient feature in which was that, barring a slight application of brakes at the top of the hill, which accounts for the pressure shown in the first line of the accompanying diagram, the action of the train brakes was entirely automatic and unintentional, produced by wave-like oscillations of compression and extension of the draw-gear, without any provoking cause at the head of the train from the application of driver or tender brakes:

"The American brake reduced speed quite promptly at first by a slight application of the driver brakes. The latter were then released and the train continued for the remainder of the run to apply and release brakes by its own undulations without any overt provoking cause. This caused quick and sudden variations of speed, each being accompanied by a violent shock in the rear, which would seem to almost stop the train, after which the speed would increase until another shock came. Each of the sharp points in the American speed chart represents one of these shocks. There were 28 in all, 20 of which are represented on the engraving. The train broke in two at two points from a violent shock before it had made much over 1¼ miles, but the speed was so low that even this left the run longer than 8 minutes."

The middle car, from the brake gear of which the accompanying diagram of brake beam pressure was obtained, was of course subject to the same fluctuations of speed as the rest of the train, but its motion was comparatively smooth and



easy, there being no violent shocks. We have in the diagram, however, a sufficient explanation of how the shocks in the rear car were caused, for it will be seen that the pressure on the brake beams was a succession of violent alternations, rising from 0 to almost twice the load on the axle, holding a moment, and falling as quickly.

These applications and release of the brakes happened from 24 to 30 times in the run shown, thus corresponding closely in number with the shocks, 28 in number, which happened at the rear of the train, the violence of each of which, as determined by the impact gauge, is given in our issue of Aug. 6. We have been unable, however, to connect these two records together by showing which impact is represented by each peak on the diagram herewith, nor does it appear necessary or probable that there should be any exact correspondence, since one is a record from the rear car and the other from the middle. All it shows is that the undulations ran through the train, although the most violent effect was confined to the rear, eight or nine cars having had their ends knocked out by the impacts of the load of car-wheels within.

A part of the apparatus in the middle car is a pencil marking 5 seconds on the diagram, which are shown by short dotted vertical lines. We give below each of these intervals, the speed in miles per hour which it indicates, the fluctuations being very curious. The speeds given are not precisely accurate, because the feed of the paper was not exactly uniform horizontally at any time, and especially not in this test, with its sudden alternations.

This diagram should be compared with those which will appear in a following issue, showing the application and release of pressure with the Westinghouse and Eames apparatus. The almost instantaneous application of the pressure in the buffer brakes is in decided contrast with the gradual application of air brakes.

Burlington Train Resistance Diagram.

We reproduce from our last week's issue the accompanying diagram showing the results of the train resistance tests at Burlington, in order that our editorial discussion of the results of the tests, which we were compelled to postpone last week, may be more readily followed. It is unnecessary to repeat the details given last week further than to say that the tests at the higher speeds were mostly on slight curves. The average degree of the curve on the various sections is given in figures above the point for the resistance on each. The dotted lines connecting points marked E (Eames), A (American), and W (Westinghouse), are the equivalent tangent resistances, indicated by allowing $\frac{1}{2}$ lb. per degree of curvature for the curve resistance and subtracting the latter from the total resistance.

The curve for train resistance plotted on the diagram is for no particular recognized formula except that it is a curve showing (1) the lowest constant for which there is any authority (4 lbs. per ton average, including the engine, for a train of 25 mixed loaded and empty cars) and the lowest rate of increase from speed for which there is any kind of authority, being that given in D. K. Clark's old formula $R = \frac{V^2}{171} + 8$ for tons of 2,240 lbs.

Some errata in the article which appeared last week are noted elsewhere under a communication from J. C. Traut-

wine, Jr., viz., Table II., last column of p. 574. The sub-tables under headings A and B are transposed, so that what is under A should be under B and vice versa. Table III., last column, mean of Westinghouse train tests, should read 5.20 instead of 6.20.

Contributions.

The Burlington Tests of Train Resistance.

PHILADELPHIA, Aug. 24, 1886.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In view of the remote chance that they may have escaped your notice, I beg to call your attention to what appear to be a couple of typographical errors in your third column of page 574, *Gazette* of 20th inst. The results of tests A and B seem to have been transposed; for under B you give average resistance of Eames train on curves, 6.07 lbs. per 2,000; while in B of second column its resistance on tangent is given as 6.84; and in table 3 the Westinghouse and Eames have respectively 6.07 and 9.42, or just the reverse of what is given in tables A and B, same column: W., 9.42; E., 6.07. Further, in table III., the average of the three equivalent tan-

gent resistances, 4.02, 6.26, 5.68, for the Westinghouse, is given as 6.20, while the true average is 5.32, which last is also $\frac{1}{2}$ lb. per degree less than the actual curve resistance, as per foot-note to table 3.

In your next, are you going to explain the striking difference in average tangent resistance in table I., namely: Westinghouse train, 4.32; Eames, 6.84, and American, 8.20?

May I also ask how you get the assumed 6.14 per cent. for the rotative energy of wheels for first table on page 574?

JOHN C. TRAUTWINE, JR.

[The headings to parts A and B of Table II., page 574, third column, were by some error transposed. The heading beginning with A—Test 152, etc., should be over the Table headed B—Test 352, etc., and vice versa. This is evident from the summary in Table III., where the figures are correctly placed, as they are also correctly shown in the diagram given last week and reproduced in this issue to accompany the editorial discussion of the results.

In the last column of Table III., page 574, the Westinghouse mean, 6.20, should read 5.20. Mr. Trautwine cor-

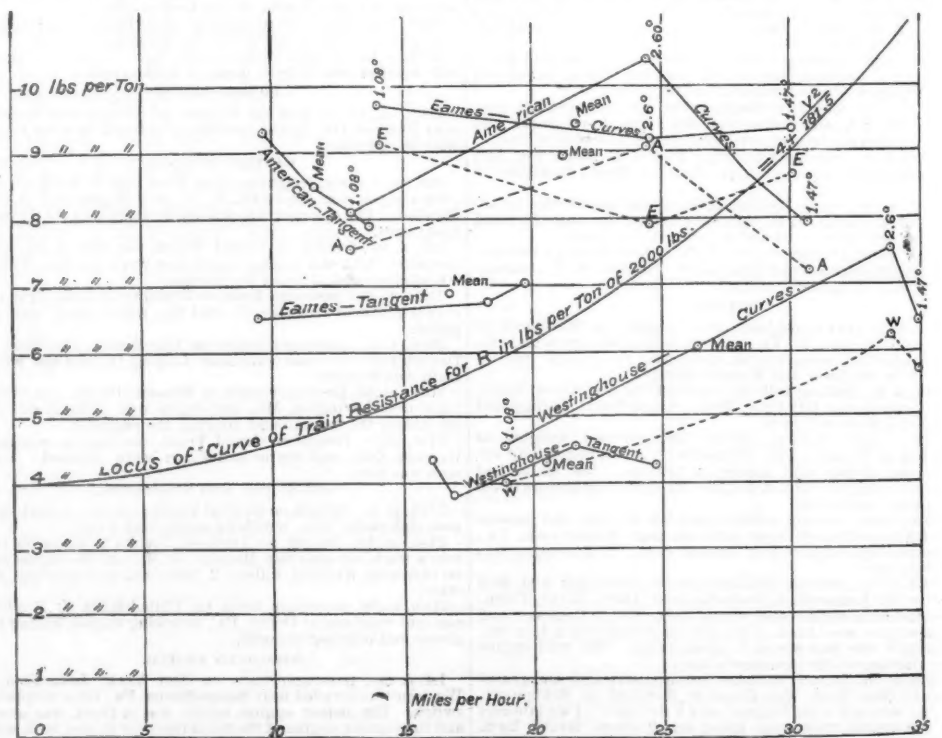
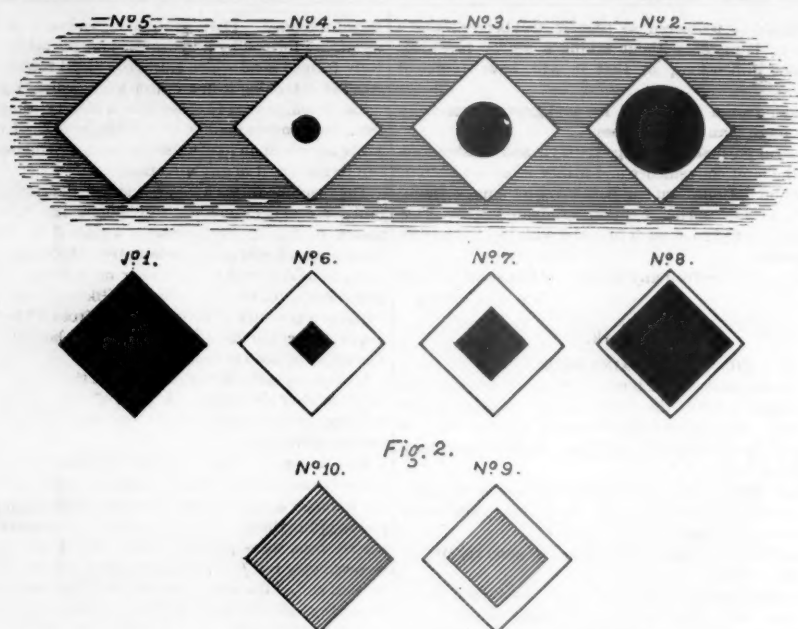


DIAGRAM SHOWING RESULTS OF THE BURLINGTON TESTS OF TRAIN RESISTANCE.

(Reproduced from our issue of last week to accompany the editorial in another column.)



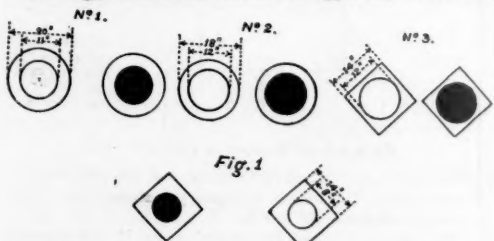
Experimental Test Targets, Chicago, Burlington & Quincy Railroad.

switch was right for main line, and a broad arrow (not shown) pointing in the direction of the side track, when set for the latter. Both the arrow and the diamond were painted the same colors, so that the form only distinguished them, and moreover, by what is now generally admitted to have been very bad practice, both the arrow and the diamond were painted a combination of red and white, a red centre and a white border, as in No. 9.

This practice has now been radically changed, and the process by which it was decided to do so is instructive, carrying conviction of what is proper practice. Consideration of the question was begun by one of the officers suggesting that the above practice was bad, and that "it would be a good idea to paint the 'diamond' white to correspond with the white light used at night and the arrow or dart red, to correspond with the red light."

This was followed a day later by an independent suggestion from another officer, through a different channel, to the same effect. In this it was urged that although form and not color was the greatest guide in the daytime, yet that it was well to educate the eye to the feeling that red meant "danger," and that it was wrong in principle to make a safety signal chiefly red, or a danger signal partly white. To this was added the rather trivial consideration that white paint cost only 5 cts. per lb., and vermilion 55 cts., so that to use white would be cheaper.

This suggestion was forwarded with approval, but returned



Signals on the Kansas City, St. Joseph & Council Bluffs Railroad.

back with a query whether "it would not be better in adopting the suggestion to use a black spot on the white ground of the diamond," similar to No. 3 or 4, fig. 2, or those in No. 1.

Reference to another officer brought out a second concurring opinion that "the white signal will show up sharper and more distinct if there is a black spot in the centre." Observations on the actual signals shown (with separate diagrams for dimensions) in fig. 1 was adduced in proof of this. A signal like No. 1, fig. 1, was seen a half a mile off, while only half as far off were signals like No. 2 and 3 seen, and yet the latter were not nearly as distinct; while No. 3, which was the nearest, was the least distinct of all. From this it was recommended that the black spot should be a little over half the smaller diameter of the diamond, as shown by the lower cut in fig. 1.

This was accompanied by a recommendation that the switch-stands, as well as the targets, be painted white, as on the Kansas City, Fort Scott & Council Bluffs road.

These concurrent opinions in favor of the spot came very near settling the question in favor of it, but fortunately the habitual caution of the successful railroad man led one of the powers that be to suggest that it "might be well to have the laboratory make some experiments with a view of determining what size the spot should be, to be most clearly distinguishable." The laboratory did, by the method outlined in fig. 2, with the result that the best size for the spot was found to be no size at all.

Some targets were prepared, 10 in all, each 14 in. square, as shown in fig. 2, in which the shaded parts of Nos. 9 and 10 indicate red. It was then assumed that the proof of the pudding was the eating, and the targets were set up in line and viewed at various distances by a number of the officers of the road. "The result showed conclusively that the two signals

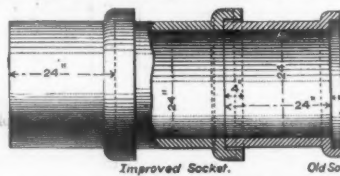
which held their color and distinctness the best were Nos. 5 (all white), and 10 (all red)." The style shown in fig. 9 "appeared pink in the distance." As to cost of paints, it was added that white lead costs about 5½ cts. per lb., and the cheapest lamp-black 3½ cts., and that instead of vermilion at 55 cts., a red chromate of lead at 11 cts. should be used, the latter being less brilliant when first applied, but about equally good after a little exposure to the weather and dust.

The further question came up as to how a pure white signal would answer in winter just after a fall of snow; but it was concluded, first, that these conditions exist only for a few days in the whole year, and, secondly, that the snow only confuses vision of the safety signal, making the danger signal more conspicuous.

After the investigation was all completed and the conclusion reached, it was found that it corresponded exactly with the practice of the Pennsylvania Railroad, which had likewise given consideration to the matter at an earlier date. It looks, therefore, as if those roads which mix colors on such signals with the intent of making them more distinct by contrast, were making a mistake.

Improved Sewer-Pipe Socket.

The simple little improvement which we illustrate, which is rather a mere strengthening in an "improvement" in the ordinary sense, has been introduced by Messrs. Blackmer & Post, of St. Louis, Mo., to remedy the difficulty which has been found to exist in the sewer-pipes used by railroad companies, that they are too weak, especially at the joints. It consists simply in increasing the depth of the socket or bell



Improved Sewer-Pipe Socket for Culverts

to make it equal to one-sixth of the diameter of the pipe, increasing its thickness correspondingly. The difference is shown exactly in the following table:

Diameter of Pipe.	Depth of Old Socket.	Depth of Improved Socket.
12 inches.	1½ inches.	2 inches.
14 "	1¾ "	2 5-16 "
16 "	2 "	2 11-16 "
18 "	2 1/8 "	2 3/4 "
20 "	2 1/4 "	3 5-16 "
21 "	2 3/8 "	3 1/2 "
22 "	2 1/2 "	3 11-16 "
24 "	2 3/4 "	4 "

The heavier socket makes the whole pipe stronger, much as a buttress stiffens a wall, and the annoyance not unfrequently experienced from broken pipes shows that this is by no means unnecessary. The danger of accidental displacement is likewise much reduced, less care is needed in making the connections, and cement may be more safely omitted, while a perfectly water-tight joint may be more easily made with cement. There is also less likelihood of breakage in handling, and, altogether, a socket of the dimensions shown will no doubt be found to be a very desirable improvement.

Foreign Railroad Notes.

A native company is building a horse railroad in the ancient city of Damascus, the first in Syria.

In Paris, in 1885, the number of passengers carried by all the horse railroads, omnibuses, the Belt Railroad and the steamboats on the Seine was 277,944,000.

Saxony, which is thickly peopled, with 5,657 square miles of territory and 1,392 miles of railroad, has no less than 472 stations, or one to every 2.95 miles of railroad and 1.2 square miles of territory. If they were evenly distributed, no place in the country would be more than about two miles from a station. The population is 3,179,168, which is 2,287

per mile of railroad and 6,736 per station—the latter vastly more than many of our Western roads have.

The vast extent of the Prussian State Railroad system enables it to escape some of the wasteful running of cars required when there are numerous small connecting lines. The Prussian system is divided into systems of moderate size worked by separate managements and with separate accounts, and as a general thing the relations of these with each other are much like the inter-relations of railroads belonging to different companies. But on these state roads the rules for interchange of cars of the German Railroad Union are modified. These rules require that a car which has been taken loaded to destination over a foreign road must be returned empty unless a load can be obtained at the place where it is unloaded, or within 125 miles of it on either side, or at some station on the way back, and then loads must be taken only for places which can be reached without lengthening the trip back to the lower road more than 25 per cent. This rule is not applied at all between different systems of the state railroads, and as a general rule every one of them can use any state railroad cars that may happen to be empty on it at the time for use anywhere.

The Union rules provide for a *per diem* payment in addition to a mileage charge for the use of freight cars. Between different systems of the state railroads the *per diem* charge is dropped, and a charge of 0.78 cent per mile is made for freight, baggage and live stock cars (very nearly the same as our charge of ½ cent, which is for larger cars, however), and 1.12 cents for passenger cars. Repairs will be made at the nearest state shop for doing such work, and will not be charged to the home road, on the assumption that such expenditures will balance each other.

A Study of Rail Wear in Germany and France.

M. Couard, Chief Inspector of the Paris, Lyons & Mediterranean Railroad, has summarized in the *Revue Générale* for April the wear of rails from German statistics of last year's publication in the admirable table below, in which he has reduced the statistics of wear to the basis of trains per 60 square millimetres (= 0.093 square inch) loss of section, dividing the rails into classes according to their moments of resistance to flexure and their tie-spacing.

TABLE I.

Wear of German Steel Rails on Wooden Cross-Ties.

No. of rails in group.	No. of specimens.	Weight lbs. per yard.	Length of rail, ft.	Moment of resistance, in.	No. of ties per mile.	No. trains to a reduction of..	Rail Mill.
						1 mm. of height.	60 mm. of section.
I.—Moment of Resistance from 154 to 158.							
1.	1	75.4	21.6	158	1,932	171,000	305,000 Upper Silesian.
2.	2	75.4	21.6	158	1,932	104,700	151,700 Krupp.
3.	3	75.4	21.6	158	1,932	56,400	82,700 Boch m.
4.	4	70.4	23.7	155	1,771	78,000	150,000 Ruhrort.
5.	5	70.4	23.7	155	1,771	71,500	112,000 Hörde.
6.	6	70.4	23.7	155	1,771	62,400	95,000 Krupp.
7.	7	75.4	21.6	158	1,707	65,000	128,000 Upper Silesian.
8.	8	72.8	21.6	158	1,707	62,600	104,700 Hörde.
9.	9	71.8	21.6	154	1,707	59,000	86,500 Krupp.
10.	10	72.8	21.6	158	1,707	44,200	77,500 Oberhausen.
11.	11	75	18.5	154	1,707	34,100	77,500 Hoesch.
II.—Moment of Resistance from 134 to 139.							
12.	12	70.4	21.6	136	1,932	77,000	128,000 Witkowitz.
13.	13	69.0	29.5	135	1,932	117,800	119,800 Reclitzka.
14.	14	74.4	21.8	135	1,932	28,700	39,300 Ternitz.
15.	15	73.8	21.3	139	1,739	108,000	150,000 Bochum.
16.	16	70.4	21.6	136	1,704	97,750	147,200 Witkowitz.
17.	17	68.1	23.0	135	1,835	70,750	114,500 Tepitz.
18.	18	73.8	21.3	134	1,739	81,700	103,600 Ruhrort.
III.—Moment of Resistance 121 to 128.							
19.	19	73.4	23.0	121	2,061	49,000	59,200 Witkowitz.
20.	20	62.4	21.3	125	1,980	21,400	29,000 Ternitz.
21.	21	65.6	23	125	1,980	18,600	27,700 Tepitz.
22.	22	64.4	21.3	126	1,980	22,200	29,500 Zeltweg.
23.	23	68.4	24.7	125	1,707	40,400	67,700 Bochum.
24.	24	68.4	24.7	125	1,707	23,700	35,900 Hörde.
25.	25	62.2	21.3	122	1,739	12,300	12,500 Reclitzka.

* Double headed.

The difference in the wear of rails from the same mill is shown in the table below:

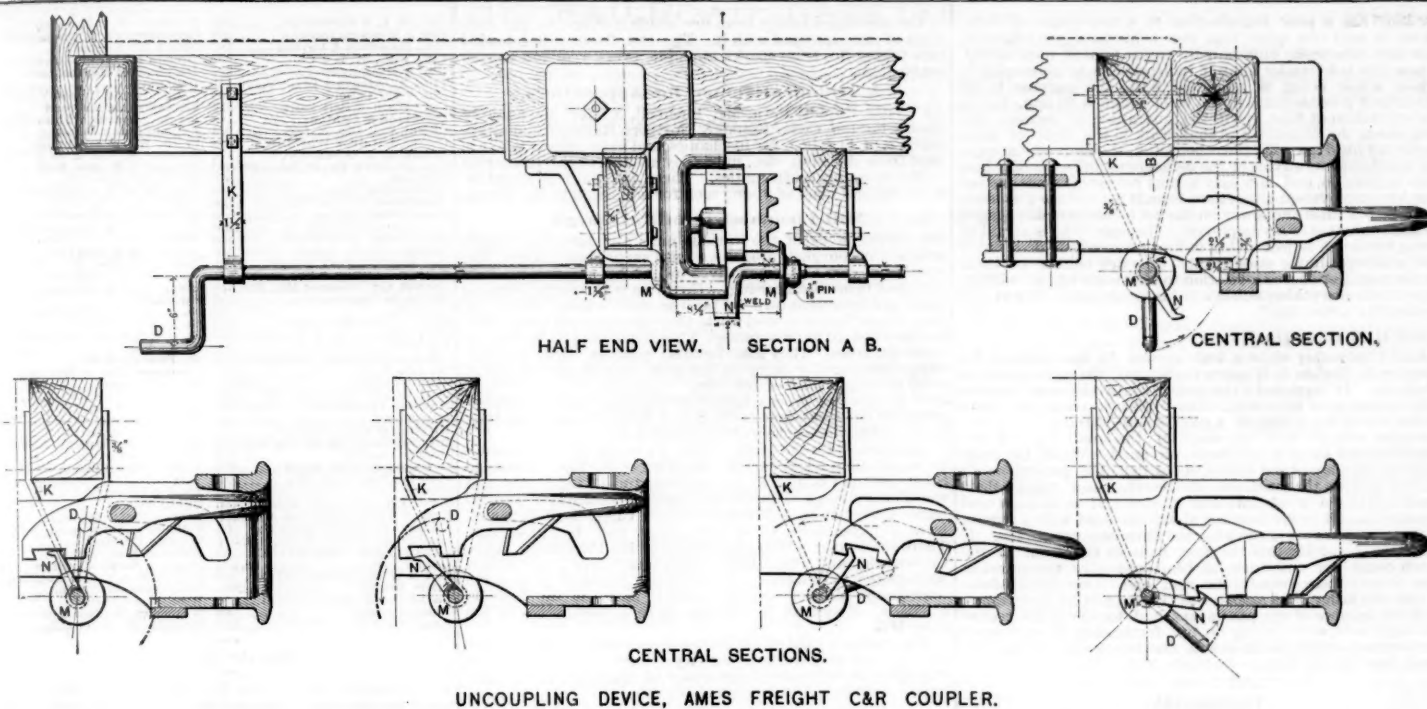
TABLE II.

Comparative Wear of Rails from Same Mill.

	Trains per 60 sq. mm. reduction of section.	Moment of resistance.	Ties per mile.
Upper Silesian.....	305,000	158	1,932
".....	128,000	158	1,707
Krupp.....	151,700	158	1,932
".....	86,500	154 to 158	1,707
Ruhrort.....	150,000	155	1,771
".....	105,000	134	1,739
Hörde.....	104,700	158	1,707
".....	35,900	125	1,707
Bochum.....	82,700	158	1,932
".....	87,700	125	1,707
Witkowitz.....	128,000	136	1,932
".....	59,200	121	2,061
Reclitzka.....	119,800	135	1,932
".....	12,500	122	1,739
Ternitz.....	39,300	139	1,932
".....	29,000	125	1,980
Tepitz.....	114,500	135	1,835
".....	27,700	125 to 128	1,980

No one who examines these figures can fail to be impressed with the enormous difference in wear, produced by the greater or less frequency of supports and by the form and weight of the rail section.

As the author says, considering the difficulty of measuring the loss of section with precision, it is surprising that the results follow such a uniform law. The only notable diver



UNCOUPLING DEVICE, AMES FREIGHT C&R COUPLER.

gence is the case of Bochum rails, where a reduction of moment from 158 to 125, accompanied by a decrease of ties per mile from 1,931 to 1,707 only produced an increase of wear of about 18 per cent.; but even here a more minute examination shows that specimen No. 3 stands quite by itself, specimens 15 and 23 presenting the same comparative wear as found elsewhere. Specimen No. 3 appears, furthermore, to have been an exceptionally poor rail in its class, while the others stood at the head of their respective classes, and the inference is plain that the difference was due to defective chemical composition or to error of observation of the wear.

It is to be observed, by the way, that the author has taken the number of trains as a unit, rather than the tonnage, on account of some observations previously made by him, pointing to the propriety of so doing. The result of using the ton unit would be almost inevitably to emphasize the results obtained, since the heavier rails would be used by heavier engines and longer trains.

The author calls attention, furthermore, to the side light thrown on the question by the observed fact of greater wear on the outer rails of double tracks, which appears to be due to the inferior support afforded to these rails by the ballast, causing practically an increase of spacing in the ties.

In the following table are given the results of observations made in March, 1885, from which the author deduces, first, that rails of more than a certain degree of stiffness do not increase in resisting power in a degree at all comparable to that observed in the other table, which appears a fair and natural conclusion; and, secondly, that the French rails show on an average 50 per cent. greater resistance to wear than the German.

TABLE III.
Wear of Rails on Tangents—Paris, Lyons & Mediterranean Railroad.

No. of specimen...	No. of trains to reduction of 60 mm. of section.	Average of each mill.	Maximum moment of resistance...	No. of ties per mile...	Rail mill...	Weight of rail lbs. per yard...
1	215,000	215,000	165	2,146	B	78
2	241,000				G	
3	204,000	209,000				
4	200,000				C	
5	191,000				A	
6	?	?				
7	?					
8	128,000	128,000			B	
9	214,000		148	1,877	A	68
10	192,000	193,000				
11	174,000					
12	172,000	172,000			D	
13	?				C	
14	146,000	146,000			A	
15	?					
16	?				F	
17	?				E	
18	?					

This deduction he reaches by throwing out specimen No. 1. Table No. 1, which is of unknown chemical composition and far superior to any other specimen in wear; but he returns specimen No. 3, of equally unknown composition, and probably a case of error in observation.

If this were also thrown out the result would look very different, for we should have the German rail of $158 \times 193^2 = 5,885,342$ stiffness bearing 151,700 trains, where the French rail of $165 \times 214^2 = 7,556,440$ stiffness carried a maximum of 215,000 trains, and an average very much below this, say, 200,000. That is, the ratio of stiffness of German rails to French ones is 78 per cent., and of durability it is 75 per cent. approximately. If then the wear were directly proportional to the stiffness in rails of the same quality, the advantage would lie a little in favor of the French rail, but nothing like 50 per cent. M. Couard then proceeds to give

the chemical composition of the German and French rails, respectively, shown in the table below:

TABLE IV.
Chemical Compositions.

RAIL MILL.	Carbon.	Manganese.	Carbon and Manganese.	Silicon.	Phosphorus.	Sulphur.	Copper.
German:							
Hörsde.....	0.27	0.44	0.71	0.05	0.10	trace	0.22
Krupp.....	0.30	0.40	0.70	0.15	0.11	0.05	0.10
Ruhrort.....	0.29	0.38	0.67	0.04	0.12	0.05	0.32
Witkowitz.....	0.38	0.27	0.65	0.10	0.07	0.01	0.04
Reichartz.....	0.31	0.17	0.48	0.05	0.07	0.02	0.03
P. L. & M.							
G.....	0.91	0.91	1.82	0.11	0.05	0.09	
B.....	0.88	0.71	1.59	0.04	0.03	0.03	
A.....	0.69	0.73	1.42	0.11	0.06	0.05	
C.....	0.85	0.40	1.25	0.34	0.05	0.04	

This shows a marked difference, which lies almost entirely in the amount of the hardening ingredients—assumed to be carbon and manganese.

The French rails, it will be seen, contain, on an average, twice as much of these elements as the German ones, and they are more uniform in the relative amount of silicon and phosphorus. They are more in accordance in this respect with the dictum of the recent Russian commission which found that the best rails contained with considerable uniformity 4 of silicon to 1 of phosphorus; but only in one case do they attain anywhere nearly so high a proportion of silicon.

Examining them in the light of the Russian report, indorsing a fixed proportion between carbon and manganese as the most inflexible test in chemical composition, it would seem as if about 4 or 5 of carbon to 3 of manganese were the proper thing, since the best French rails ("A") in both grades had this, and also the best German ones ("Witkowitz"), whose composition was known and in the class where they were used.

It is unfortunate that the composition of the excellent Bochum and Upper Silesian rails was not known.

M. Couard sums up that the rails most carburetted and with most manganese are the hardest and most durable, which is, after all, in agreement with the Russian report, since this chief point was that rails that were hard were not necessarily brittle in proportion to their hardness, and M. Couard would probably admit that a certain limit of hardness should not be exceeded.

The whole result of the two investigations may be summarized as follows: Hardness is a virtue in rails up to a certain point, where it passes into brittleness.

The latter quality may be found in soft rails as well as hard ones, but is always found in excessively hard ones. It seems to depend below the point of carburation (which in itself produces brittleness) upon a proportion between the silicon and phosphorus, and between the carbon and the manganese, neither of which is definitely ascertained; but the least brittle proportion, other things being equal, is 4 of silicon to 1 of phosphorus, and 3 of carbon to 2 of manganese.

M. Couard concludes with a table showing the relative wear of steel on iron and wood ties, but the cases compared differ so widely that little can be learned from it. That little seems unfavorable to iron ties.

Uncoupling Device for the Ames Coupler.

The annexed illustration represents a device lately applied to the Ames coupler for the purpose of uncoupling with greater ease and facility than at present.

Its advantages consist in being able to draw the link entirely into the pocket and out of any danger from breakage,

of guiding the link both up and down, with the same lever, as it (the lever) revolves, and can engage the link both on the bottom and top side. It also hangs the lever where it cannot be easily bent or broken, and dispenses entirely with a chain.

The illustrations show very clearly the different positions assumed by the link while being uncoupled. Starting at the right-hand upper corner of our illustration, where the link is in a position ready to couple, the successive positions taken by the link in setting it not to couple are clearly shown in the four central sections in the lower part of our illustration. The view on the extreme right hand shows the handle moved and the tooth N just engaging the link. The next view to the left shows the link being lifted and slightly drawn back. In the next view the link is set completely back and will not couple. The extreme left-hand view the manner in which the link can be again pushed forward and set to couple.

THE SCRAP HEAP.

Railroad Young Men's Christian Association.

Mr. L. B. Scott, General Secretary of the Association at Rutland, Vt., sends us the following notes of progress there: "Our rooms are located opposite the Union Depot, and consist of a reading room, parlor, game room, two bathrooms, dining-room for trainmen who bring their meals, and gymnasium."

"Educational evening classes in penmanship, arithmetic, short-hand and mechanical drawing are opened to the men. A course of entertainments is given during the winter months."

"Men are visited when sick or injured, and watchers furnished when needed. A men's social prayer meeting, a cottage meeting and a Sunday afternoon Gospel meeting are maintained."

The work of the Association is strongly indorsed by the superintendents of all the railroads running into Rutland.

Quick Work with a Train Wrecker.

The Michigan Central recently performed some very quick work with the assistance of justice. One of the tracks near Kalamazoo was obstructed with some ties, the purpose of the wrecker being to derail the train. This happened on a Monday evening. The attempt was discovered in time to remove the obstruction. The next morning a detective was sent to Kalamazoo, the would-be wrecker was discovered, arrested and tried that day, and before evening the guilty man was in the penitentiary at Jackson, sentenced to serve 20 years. This is one of the quickest cases on record.—*Chicago Inter-Ocean*, Aug. 23.

A Collision on a Small Scale.

Collisions between trains are of daily occurrence all over the country, but it is not often that we are called upon to report a collision between hand cars. On Friday, however, two hand cars on the Erie road at Hooper, near Binghamton, collided with great force. Patrick Buckley and a young man by the name of Hogan, of Binghamton, were badly hurt. The crank of Buckley's car struck him a terrible blow on the back of his neck, completely paralyzing the body, so much so that he has no use of his limbs.—*Port Jervis (N. Y.) Gazette*, Aug. 23.

Wings Against Steam.

Engineer Charles Naimby, of the Pennsylvania Railroad, is holding a pet which seems to have escaped from its owner. As he was driving his engine across the Hackensack Meadows one day last week a pigeon flew close to the locomotive and accompanied it along the track. The engine was running at the rate of about 30 miles an hour, but the bird at first went faster than that. It seemed to be very tired, however, and it soon moderated its pace to that of the locomotive, drawing nearer as it did so. After a mile or so had been covered it drew so close that the engineer put out his hand and seized it. The bird seemed to be rather glad of the rest afforded it and took its capture composedly. It looked like a carrier pigeon.

A Sermon to Employees.

The following is a verbatim copy of a notice which the Chicago, Burlington & Quincy Co. has had printed, framed and sent to various shops and offices, where they are posted for the benefit of the employees. The sentiment conveyed is given as that which actuates the officials of the company in their treatment of employees: "The servant, man or woman who begins a negotiation for service by inquiring what privileges are attached to the offered situation and whose energy is put chiefly in stipulations, reservations, and conditions to 'lessen the burden' of the place will not be found worth the hiring. The clerk whose last place was 'too hard

for him 'has a poor introduction to a new sphere of duty. There is only one spirit that ever achieves a great success. The man who seeks only how to make himself most useful, whose aim is to render himself indispensable to his employer, whose whole being is animated with the purpose to fill the largest possible place in the walk assigned to him, has in the exhibition of that spirit the guarantee of success. He commands the situation and shall walk in the light of prosperity all his days. On the other hand, the man who accepts the unwholesome advice of the demagogue and seeks only how little he may do, and how easy he may render his place and not lose his employment altogether, is unfit for service; as soon as there is a supernumerary on the list he becomes disengaged as least valuable to his employer. The man who is afraid of doing too much is near of kin to him who seeks to do nothing and was begot in the same family; they are neither of them in the remotest degree a relation to the man whose willingness to do everything possible to his touch places him at the head of the active list."

Very Bad Georgia Boys.

Last Wednesday night a leak sprung in the tank on the Savannah, Florida & Western track near the east switch in Valdosta. It happened to be on the south side and threw a bold stream upon the track. The 9 o'clock passenger train pulled out of our depot at a good speed without being acquainted with the fact, but some of the small boys in the neighborhood knew it and were on hand. When the train approached they raised such a shout that the passengers all rushed over on the north side of the coach and popped their heads out to see what was the matter and each man and woman was hit in the face and about the head with a stream quite as bold as that thrown by the Patterson fire engine. It was done so quickly that the first man in the front of the coach could not withdraw his head and give the alarm in time to save those even in the rear end. Our friend, John Willis, of Ouseley, was among the victims, and he, in common with the balance of the passengers, had to spend the rest of the night with wet clothing on, but fortunately it was one of the warmest nights we have had, and we suppose no one suffered from the ducky. — *Valdosta (Ga.) Times.*

TECHNICAL.

Locomotive Building.

The Pittsburgh Locomotive Works in Pittsburgh have taken a contract to build 7 locomotives for the Pittsburgh & Western road.

The Manchester Locomotive Works in Manchester, N. H., have just delivered 2 new locomotives to the Chicago & West Michigan road.

The Car Shops

The Pullman Car Works in Pullman, Ill., have recently delivered 3 baggage cars and 3 first-class passenger cars to the Chicago & West Michigan road.

The Litchfield Car Works in Litchfield, Ill., are building 200 box cars for the Mobile & Ohio road.

The Youngtown Car Works in Youngstown, O., are at work on a contract for 500 box cars for the Pittsburgh & Western road.

The St. Charles Car Co. in St. Charles, Mo., is building 400 box cars for the Atchison, Topeka & Santa Fe. These cars are equipped with the Wagner car door.

The Harrisburg Car Co. in Harrisburg, Pa., is completing an order for 500 box cars for the Pittsburgh & Western road.

The LaFayette Car Works in LaFayette, Ind., are building 100 box cars for the Atchison, Topeka & Santa Fe road. These cars are equipped with the Wagner car door.

The works of the Dure Car Manufacturing Co., in Wilmington, Del., have been sold by the company to Pullman's Palace Car Co. for use as a repair shop. These works were formerly operated by the firm of Bowers, Dure & Co., which was reorganized as a corporation under the present name some years ago.

The improved car axle-boxes made by the National Railway & Street Rolling Stock Co., of Worcester, Mass., are to be put on the cars of the Worcester & Shrewsbury road.

Bridge Notes.

The Columbia Iron Works in Baltimore have taken a contract for a bridge over Jones Falls at Charles street in that city. The bridge will be of 114 ft. span.

Notice is given that the Atlanta Bridge & Iron Works in Atlanta, Ga., will be sold in that city Nov. 25 next, by L. J. Hill, trustee, to satisfy a mortgage for \$30,000 made on Jan. 23 last. The property includes 6 acres of land, with building and the rolling mill and bridge machinery. The property was formerly owned by the bridge-building firm of Wilkins, Post & Co., which was reorganized as the Atlanta Bridge & Iron Works about a year ago.

Iron and Steel.

The Old Dominion Iron & Nail Co. has contracted with a Philadelphia firm for a complete Bessemer steel plant, to be erected at its works at Belle Isle, opposite Richmond, Va. Work is to be commenced at once and the steel plant is to be finished in January. It is to have a capacity of 200 tons of steel per day.

The Talcott Forge at Brightwood (Springfield), Mass., is offered for sale by Charles Marsh, administrator of the late Norman W. Talcott, who owned and operated it for a number of years. The plant is large and in good order and has for years done a very large business in car axles and other forgings. Mr. Marsh (at the Fynchon National Bank, Springfield, Mass.) will give further information.

Norristown Furnace in Norristown, Pa., has been repaired and will shortly go into blast.

The Milton Manufacturing Co. is building a rolling mill at Milton, Pa., to make bar iron and steel.

The Western Steel Works in St. Louis are now turning out an average of 300 tons of steel rails daily.

The Iron River Furnace at Iron River, Wis., has been leased to Charles Hinrod, of Chicago, who will run it hereafter.

The rolling mill of the Wabash Iron Co. at Terre Haute, Ind., is now running full double turn.

The Rail Market.

Steel Rails.—The market is quiet and steady, with quotations at \$34-\$35 per ton at Eastern mills. The mills, as for some time past, are all full of work and have orders on hand for some time to come.

Rail Fastenings.—Prices are steady and nominally unchanged at 2.40 cents per lb. for spikes in Pittsburgh; 2.75 at 3.10 for track-bolts, and 1.65 at 1.80 for splice-bars.

Old Rails.—Old iron rails are more active and some large sales are reported, with quotations at \$19-\$20 per ton at tidewater. Old steel rails are scarce and in demand, and are quoted at \$22-\$23 per ton in Pittsburgh.

Car Doors.

The Wagner car door is now being put on some 1,200 cars under construction for different roads, including the Atchison, Topeka & Santa Fe; the Cincinnati, Indianapolis, St. Louis & Chicago; the New York, Lake Erie & Western; and the Mobile & Ohio. We are informed that this door is meeting with much favor from cotton carrying roads, on account

of the additional safety from fire which it offers to the contents of cars equipped with it. The loss from cotton-loaded cars taking fire from sparks amounts every year to a considerable item.

A Technical School for Apprentices.

At Cedar Rapids, Iowa, Mr. Bushnell, Master Mechanic of the Burlington, Cedar Rapids & Northern Railroad, has established a night school for mechanics and apprentices, who are kept from drawing, etc., until they are thoroughly grounded in the necessary mathematics. There are many applications from the best class of young men for admission to the school.

Mill Locomotives in Pittsburgh.

The rolling stock of the various mills and furnaces in and around Pittsburgh aggregates a total surprisingly large. The number of cars and locomotives owned by the various iron and steel firms is surprising. The firms with which Carnegie Bros. are interested own by far the most rolling stock. At their Edgar-Thomson steel works they have 8 broad-gauge locomotives and 10 narrow-gauge. These engines are entirely for local purposes. They also have 80 gondola cars; 14 wide-gauge iron cars for carrying hot metal, and 62 narrow-gauge cars, making a total of 156 cars. Carnegie, Phillips & Co., at their Homestead Works, have 3 broad-gauge and 2 narrow-gauge locomotives, and at the Union Mills, Pennaville, they have another locomotive of the broad-gauge.

Laughlin & Co., at their Eliza Furnace, have 2 locomotives and 49 gondola cars for carrying coke. The Pittsburgh Steel Casting Co. has 2 locomotives and 12 ingot cars, and the Pennsylvania Tube-Works own 1 locomotive and 30 cars. Oliver Bros. & Phillips, at their Clapp-Griffith works, have 2 locomotives of narrow-gauge and 1 wide-gauge. There is another wide-gauge engine at the Pittsburgh Forge Co.'s works, and Park Bros., Smallman street, also own a wide-gauge locomotive. At the Lucy Furnace there are 3 wide-gauge shifting engines, and 2 more at the Isabella Furnace. Moorhead & Co. also have a locomotive at the Soho Mill.

This makes a total of 39 locomotives owned by the principal iron and steel-works in the city. Each of these cost from \$2,000 to \$6,000 apiece, and many of them are powerfully built. — *Pittsburgh Commercial Gazette.*

The Steel Rail Manufacturers.

The manufacturers of Bessemer steel rails held an important meeting at Long Branch on Thursday, Aug. 12. A year ago they formed an organization at Long Branch for the purpose of so regulating the output of rails that overproduction and ruinous prices, which had for some time prevailed, would be prevented in the future. The arrangement which was then made has worked so well, not only for the immediate interest concerned, but also for the general business interests of the country, that the manufacturers at their meeting to-day decided with complete unanimity to continue it for another year. The demand for steel rails is now quite active, and our immense steel rail industry is in a healthy condition, supplying all the rails to our railroad companies that they want require and at reasonable prices. It is believed that during the coming year the capacity of our steel rail mills will be fully equal to the demand. There will, therefore, be no necessity to import foreign rails, and a steel rail boom and its attendant evils will be avoided. It is important to add that the organization of steel rail manufacturers, which has just met for a second time at Long Branch, does not undertake to fix prices, each company making its own contracts and fixing its own prices. The organization is simply and only a check to overproduction.

It is an interesting fact that the prosperity which the country is now experiencing dates from a year ago, when the steel rail organization was formed.

The following gentlemen were present at the meeting: Samuel M. Felton, President Pennsylvania Steel Co.; Alfred Hunt, President Bethlehem Iron Co.; E. Y. Townsend, President Cambria Iron Co.; George M. Rice, President Worcester Steel Works; Chester Griswold, President, and Selden E. Marvin, Secretary and Treasurer of the Troy Steel & Iron Co.; Andrew Carnegie and John Walker, representing Carnegie Brothers & Co., Limited; B. G. Clarke, Chairman Lackawanna Iron & Coal Co.; E. S. Page, Secretary Cleveland Rolling Mill Co.; O. W. Potter, President North Chicago Rolling Mill Co.; Alexander J. Leith, President, and W. R. Stirling, Treasurer of the Joliet Steel Co.; H. H. Porter, representing the Union Steel Co.; A. M. Wilcox, President Western Steel Co. Mr. Potter presided over the meeting and Mr. Robert F. Kennedy acted as Secretary. The meeting was held in one of the cottages of the West End Hotel, and was in session for several hours. The only rail-making company not represented in person was the Scranton Steel Co., but its views were communicated to the meeting by the Chairman. — *Bulletin of the American Iron & Steel Association.*

A New Brunswick Passenger Train.

The New Brunswick Railway Co. has just completed at its shops at McAdam Junction, N. B., a passenger train to run between St. John and Fredericton. The train consists of a locomotive with 15 by 22 in. cylinders and 5 ft. driving wheels, a combination baggage, mail and smoking car and a first-class passenger car. The cars are handsomely finished inside in native wood, are mounted on M. C. B. standard trucks, and are in every respect of the latest design. The platforms of the passenger car are of unusual size, and are protected by gates and provided with camp stools, to enable the passengers to enjoy a full view of the scenery along the St. Johns River. The wheels under the cars are cast iron chilled wheels, made by James Harris & Co., of St. Johns, N. B., and are of unusually heavy pattern. The train was built under the supervision of Mr. G. A. Haggerty, Superintendent of Motive Power.

ANNUAL REPORTS.

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Atlantic & Pacific.

This company operates its Western Division, which is made up of the Atchison, Topeka & Santa Fe, Albuquerque, N. M., to Junction, 12.7; line owned from Junction to Colorado River at the Needles, Ari., 559.6; Southern Pacific, leased, Colorado River to Mohave, Cal., 242.8, and a branch from Gallup, N. M., to coal mines, 3.3; a total of 818.4 miles.

The company also owns the Central Division, 112 miles, which it does not operate, but leases to the St. Louis & San Francisco Co.

The company has published no report for several years. The following figures for the year ending Dec. 31 last, are taken from *Poor's Manual*.

The earnings for the year were as follows, on the Western Division.

	1885.	1884.	Inc. or Dec.	P. c.
Earnings.....	\$1,826,721	\$1,048,862	I. \$779,859	68.1
Expenses.....	1,585,848	1,159,013	I. 426,835	36.8
Net earnings.....	\$240,878	\$72,511	I. \$168,367	232.9
Gross earn. per mile.....	2,232	1,717	I. 515	30.0
Net.....	295	106	I. 189	64.2
Per cent. of exps.....	86.8	106.6	D. 19.8	22.8

* Deficit.

The average mileage for the year 1884 was 633 miles.

The company had originally a land grant of about 16,000,000 acres. Of this 1,195,495 acres have been sold and 5,425,460 acres conveyed to a trustee to secure advances made by the Atchison, Topeka & Santa Fe and the St. Louis and San Francisco companies. Sales in 1885 were 120,000 acres; receipts from sales, stampage, etc., \$136,860. Payments were \$30,000 toward interest on bonds and \$44,453 for expenses of Land Department.

To the net earnings above are to be added \$331,000 rebates received from the St. Louis & San Francisco and the Atchison, Topeka & Santa Fe under traffic contracts, making a total of \$571,878. No statement of the disposition of these net earnings is given.

St. Paul, Minneapolis & Manitoba.

At the close of the last fiscal year, June 30, this company operated 1,485 miles of road, an increase of only 14 miles over the preceding year.

The company has some 300 miles of new road under construction in Dakota, but none of this was completed in time to be brought into operation before the close of the year.

The figures below are from a preliminary statement made at the annual meeting last week, in advance of the publication of the full annual report, which is not yet ready.

The earnings for the year were as follows:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Earnings.....	\$7,321,736	\$7,776,164	D. \$454,428	5.8
Expenses.....	3,838,652	3,509,979	I. 328,673	9.3
Net earnings.....	\$3,483,084	\$4,266,237	D. \$783,153	18.4
Gross earn. per mile.....	4,948	5,330	D. 382	7.2
Net.....	2,253	2,924	D. 671	19.8
Per cent. of exps.....	50.2	45.1	I. 5.1	11.3

Expenses include taxes in both years. The reduction in earnings was chiefly due to the lower rates received on the traffic carried.

A comparative statement of income account is as follows:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Net earnings.....	\$3,483,084	\$4,266,237	D. \$783,153	18.4
Other income.....	171,116	66,283	I. 104,833	158.1
Total.....	\$3,654,200	\$4,332,520	D. \$678,320	15.7
Interest.....	1,990,820	1,980,280	I. 10,540	1.0
Dividends.....	1,300,000	1,300,000	D. 100,000	7.7
Total.....	\$3,190,820	\$3,800,280	D. \$609,460	22.4

Surplus for the year. \$454,380 \$1,052,240 D. \$597,860 56.8

The dividends paid last year were 6 per cent., against 6 1/2 per cent. in the preceding year. The figures above do not include the net revenue from the Land Department, which was \$350,114. This was carried to the sinking fund, in accordance with the trust.

Denver & Rio Grande Western.

This company owns a line from Ogden, Utah, through Salt Lake to the Colorado line, with several coal branches, 363 miles in all. The road has been for some time in the hands of a receiver, pending arrangements with the bondholders.

A circular from President W. J. Palmer, dated Aug. 20, says: "On July 29 orders were made in the suit between this company and the Denver & Rio Grande Railway Co. for the discharge of the Receiver and the turning over of the railroad and property to the Western Co. These orders have been carried into effect. They were consequent upon the settlement of all controversies between the companies, and also upon the fact that a majority of the bondholders in amount had deposited the matured coupons and those maturing to and including March 1, 1889, with the funding trustees, and received funding certificates therefor.

"This perfects the funding plan, which is now, by the terms of the mortgage, obligatory on all bondholders. The

bonds thus funded, with the certificates representing the deposited coupons, have been listed by the New York Stock Exchange, and are designated as assented bonds.

On Sept. 1, \$17.81 per bond will be paid, making, with the \$12 already paid, the sum of \$29.81 per bond to assenting bondholders.

"The property has been reorganized under the funding plan without expense of committees or of foreclosure proceedings, and avoiding the dangers and hazards involved in litigation between bondholders and their company."

The statement for the year ending June 30 is as follows:

Earnings (\$2.923 per mile).....	\$1,075,543
Expenses (65.1 per cent).....	700,547
Net earnings (\$1.019 per mile).....	\$374,996
Rental of equipment.....	43,234

Balance.....\$331,762

Expenses include taxes and insurance amounting to \$14,911. The yearly payments required under the funding plan will be \$205,689 in 1886 and \$253,575 in 1887.

The circular says: "The payments for rental of equipment will cease on title to rolling stock being perfected and transferred in accordance with the settlement made with the Denver Co., above referred to."

"The effect of the betterments made is telling permanently in a reduction of the cost of operating and maintenance."

Under the funding plan there is payable on each \$1,000 bond this year \$29.81; in 1887, \$36.75; in 1888, \$38.25; in 1889, \$39.07; in 1890, and each year thereafter until 1895, \$39.75. On Sept. 1, 1895, the principal of the funding certificates, \$195 each, will be due and payable. From that date until maturity of the bonds in 1911 the full interest, \$60 yearly, will be payable on each bond. The amounts payable 1890-95, inclusive, include full interest on the bond and interest on the funding certificate.

Louisville & Nashville.

This company has issued a memorandum statement giving the results of its operations for the fiscal year ending June 30 last. Below is given a summary of this statement, which is not intended to take the place of the full report, which will be issued at the usual time.

The road operated during the year was 2,015 miles, against an average of 2,057 miles in 1884-85. The reduction was caused by the surrender of the branch from Montgomery, Ala., to Selma, 50 miles, the lease of which expired April 30, 1885, and was not renewed.

The report covers only the road operated directly and not the roads controlled, but not worked, by the company. No statement is made of any changes in capital account.

The earnings for the year were as follows:

1885-86.	1884-85.	Inc. or Dec.	P. c.
Earnings.....\$13,177,018	\$13,934,346	D. \$757,328	5.4
Expenses.....8,243,291	8,182,255	I. 61,036	0.4

Net earnings.....	\$4,933,723	\$5,754,091	D. \$790,368	13.7
Gross earn. per mile.....	2,463	2,836	D. 373	15.2
Net ".....	2,463	2,797	D. 334	11.9
Per cent. of exps.....	62.3	58.7	I. 3.6	

Of the decrease in gross earnings \$674,293 was in passenger earnings and only \$85,035 in freight and miscellaneous earnings.

A comparative statement of income account is as follows:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Net earnings	\$4,933,723	\$5,754,091	D. \$790,368	13.7
Inc. from invest's..	207,807	198,592	I. 9,215	4.6
Total	\$5,141,530	\$5,952,683	D. \$781,153	13.1

Interest, rentals, etc.	4,272,913	4,215,948	I. 56,965	1.4
Taxes.....	370,814	379,946	D. 9,132	2.4
Total charges.....	\$4,643,727	\$4,595,794	I. \$47,933	1.0

Net surplus.....	\$527,803	\$1,356,889	D. \$829,086	61.1
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The increase in interest and rentals of \$56,964 is caused by the non-payment by the Kentucky Central Railroad Co. of \$60,000 rental for annual rent of the joint use of the track of the Knoxville Branch from Livingston to Jellico, which is now in litigation.

The report, presented by Vice-President Ex. Norton says:

"The decrease in earnings is accounted for as follows:

"1. The Selma Division from Montgomery to Selma, a distance of 50 miles, was operated under lease which expired on April 30, 1885. The earnings of this division for the 10 months, July, 1884, to April, 1885, were \$91,622.

"2. In 1884-5 the Exposition travel to New Orleans was very large. The decrease in passenger earnings is principally due to this.

"3. The short wheat crop in the states of Kentucky, Tennessee, Southern Indiana and Southern Illinois affected the revenue.

"4. The heavy floods during the month of March, 1886, in Alabama and Tennessee caused the suspension of through business to New Orleans for a period of nearly a month, not only decreasing the earnings, but largely increasing the expenses. These floods were unprecedented, the Alabama River having been 5 ft. higher than it was ever known before.

"5. The strikes at East St. Louis and the strike of the switchmen at Evansville also caused a decrease in the earnings and an increase in the expenses.

"6. The change of gauge also caused a loss in revenue and an interruption of regular business. On the 29th, 30th and 31st of May, the days the change was made, business was almost entirely suspended. About half of the rolling stock was changed from 5 ft. to the standard 4 ft. 9 in. gauge between the 15th and 30th of May. This left the company short of rolling stock for this period, and after the tracks were changed, on May 29th to 31st, the other half of the rolling stock had to be sent to the shops to be changed. This left the company with insufficient rolling stock to do its business for a period of from 20 to 30 days.

CONSTRUCTION ACCOUNT.

"The construction on the entire line amounted to \$618,159, of which amount there will be returned to the company by the Nashville & Decatur, the South & North Alabama, the Mobile & Montgomery, and the Southern Division Cumberland & Ohio \$115,041, making a balance of \$503,118, which has been charged to capital account or cost of road.

"The construction account includes changing the gauge of the track from 5 ft. to standard 4 ft. 9 in.: of 1,583.3 miles of main track and 185.8 miles of sidings; a total of 1,769.1 miles of track.

Cost of changing gauge of track.....	\$91,998
Also changing the gauge of 264 locomotives.....	53,481
And 8,037 passenger and freight cars.....	49,577

Total cost of change of track and rolling stock.....\$195,056

"The construction account includes the cost of 30 new consolidation and passenger locomotives purchased from the Rogers Locomotive Works, costing \$239,405.

"The work of changing the gauge of 1,769 miles of track was one of great magnitude, such as was never before accomplished by one company in so short a time, and probably never will be again, and great credit is due to all the employees of

the road for the prompt and energetic assistance rendered by them at that time and the great interest which they took in the matter; the engineers, firemen, shopmen and others in the mechanical, transportation and road departments having voluntarily offered their services gratuitously to the company during the one day in which the change was made on the various divisions.

"Since the gauge has been changed everything has been working satisfactorily.

"It has done away with the necessity of operating 11 different hoists for changing the tracks at points where an interchange of cars was had with foreign roads of a different gauge.

"These hoists were operated at a large expense and caused serious delays to traffic, all of which are now done away with.

"During the past year the property has been maintained and the company has built in its shops six new, large consolidation engines, and has also bought three new engines, and has laid in track 138.64 miles of steel rails, all of which have been charged to operating expenses.

"The annual report will be issued in October, and will contain full details of all the operations for the past year."

Little Rock & Fort Smith.

This company owns a line from Little Rock, Ark., to Fort Smith, 165 miles, with 5 miles of branches. The report is for the year ending Dec. 31.

The Coal Hill Branch, 2 miles, was added early in the year, increasing the mileage worked from 163 to 170 miles.

The equipment includes 16 locomotives; 10 passenger and 3 baggage cars; 178 box, 24 stock, 119 flat, 97 coal and 7 caboose cars; 1 tool car.

The general account is as follows, condensed:

Stock.....	\$4,505,309
Funded debt.....	2,315,010
Coupon notes.....	636,796
Accounts and balances.....	156,365
Income account.....	802,241

Total.....	\$8,415,715
Road and property.....	\$7,092,402
Land notes.....	427,075
Arkansas state aid bonds.....	119,012
Accounts and balances.....	85,843
Cash.....	91,382

The funded debt includes \$2,314,500 first mortgage bonds and \$510 scrip. The company holds \$163,000 additional bonds in the treasury. The funded debt was reduced by \$61,000 bonds redeemed and canceled.

The Land Department reports 29,800 acres sold for \$107,104. These lands were sold at an average of \$3.60 per acre. The taxes paid on lands were \$12,719. The Department held at the close of the year \$427,075 in land notes and contracts, and 638,067 acres of unsold lands.

The earnings for the year were as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Freight.....	\$369,068	\$345,468	I. \$24,200	7.0
Passengers.....	188,503	188,522	D. 19	.....
Mail, etc.....	56,117	55,082	I. 1,035	1.9

Total.....	\$614,888	\$589,072	I. \$25,816	4.3
Expenses.....	385,378	343,469	I. \$41,909	13.1

Net earnings.....	\$225,510	\$245,603	D. \$19,673	8.0
Gross earn. per mile.....	3,613	3,506	I. 107	3.1
Net ".....	1,339	1,402	D. 63	4.7
Per cent. of exps.....	63.4	58.3	I. 5.1	

The earnings were reduced by a large decrease in freight rates, although there was a considerable increase in the freight traffic. The increase in business and in train mileage prevented any reduction in expenses.

The result of the year was as follows:

Net earnings, as above.....	\$225,510
Land accounts.....	40,534
Miscellaneous, Little Rock Junction bonds.....	4,100
Total.....	\$270,544
Interest, taxes, etc.....	\$220,620
Land expenses.....	49,604
Surplus for the year.....	280
Surplus, Jan. 1, 1884.....	801,981
Balance, Dec. 31, 1884.....	\$802,241

Construction account was increased during the year by \$54,385, the cost of the Coal Hill Branch and of new equipment bought.

The traffic for the year was as follows:

Surplus for the year.....	280
Surplus, Jan. 1, 1884.....	801.951
Balance, Dec. 31, 1884.....	\$802.241
Construction account was increased during the year by \$54,385, the cost of the Coal Hill Branch and of new equipment bought.	
The traffic for the year was as follows:	

Average rate:
Per passenger-mile..... 4.082 cts. 4.165 cts. D. 0.113 ct. 2.6
Per ton-mile..... 2.493 " 3.267 " D. 0.777 " 24.2

Of the tonnage last year cotton furnished 21,824 tons. Coal carried for company's use is not included. The average train load increased 20 per cent., owing to the use of heavier engines.

The road and equipment were much improved. There were 200,000 new ties used in renewals. There are now 25 miles of the road laid with steel, and the intention is to renew from 10 to 15 miles yearly.

The earnings were reduced by a partial failure of the cotton crop and by general business depression. The coal business is improving, but was not as large as expected, owing to the difficulty in getting labor enough at the mines.

Work has been begun on a line from Fort Smith through the Indian Territory to Kansas since the report was issued. This road will be built by an allied company, and is expected to bring a large addition to the business of this road.

East Tennessee, Virginia & Georgia.

This company operates lines extending from Bristol, Tenn., to Selma, Ala., and Brunswick, Ga., with several branches, 1,098 miles in all. A statement of earnings for the year ending June 30 has been published, from which and other sources the following report has been compiled.

The road was recently sold under foreclosure, and a new company is now being organized by the bondholders who bought the property at the sale.

The capital account, when the reorganization is completed, will be about as follows:

First preferred stock.....	\$11,000,000
Second preferred stock.....	18,500,000
Common stock.....	27,500,000
Total.....	\$57,000,000

Consolidated mortgage 5s.....	\$12,676,000
Old divisional bonds, various issues.....	7,324,000
Cincinnati & Georgia 6s.....	2,000,000
Total stock and bonds.....	\$79,000,000

The interest charge will be \$1,193,890 yearly, to be reduced, as the divisional bonds mature and are replaced by

consols. The total issue of consols authorized is \$20,000,000, of which \$7,324,000 are reserved to provide for the divisional bonds.

The earnings for the year are stated as follows:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Earnings.....	\$4,199,578	\$4,021,567	I. \$178,011	4.4
Expenses.....	2,623,310	2,733,224	D. 109,914	4.0

Net earnings.....	\$1,496,268	\$1,288,343	I. \$207,925	16.1
Gross earn. per mile.....	3,752	3,683	I. 69	1.9
Net ".....	1,363	1,173	I. 190	16.1
Per cent. of exps.....	63.7	68.0	D. 4.3	

Taxes are not included in expenses. The operating expenses show a very considerable reduction from the previous year, partly due to an improved condition of road and equipment.

Allowing \$150,000 for taxes, there would remain from last year's net earnings a balance of \$1,346,268, which would be sufficient to pay the interest charges as stated above and leave a surplus of \$152,378, or enough, probably, to meet car-trust interest and miscellaneous charges.

Chicago & West Michigan.

This company owns a line from La Crosse, Ind., to Pentwater, Mich., 208.74 miles, with 204.77 miles of branches; 413.51 miles in all. The chief branches are to White Cloud, 70 miles, and to Big Rapids, 51.20 miles. There are 306.05 miles laid with steel, and the road has 81.86 miles of sidings. The only change last year was the addition of 5.89 miles of new sidings. The report is for the year ending Dec. 31.

The equipment includes 46 locomotives; 27 passenger, 3 combination and 14 baggage, mail and express cars; 790 box, 1,011 flat, 21 log and 16 caboose cars; 1 official car, 1 tool and 4 boarding cars, 1 pile-driver, 2 steam excavators and 5 snow-plows.

The general account is as follows, condensed:

Capital stock.....	\$6,796,833
Funded debt.....	3,845,000
Accounts and balances payable.....	187,810
Income account, balance.....	271,524

Total.....	\$11,101,167
Road and equipment.....	\$10,057,147
Ch. res. Merriam, trustee, stocks held.....	639,659
Materials on hand.....	65,337
Accounts and bills receivable.....	292,169
Cash.....	51,855

The funded debt was increased \$22,500 during the year; it consists of \$480,000 Chicago & Michigan Lake Shore first 8s; \$576,000 Grand Rapids, Newaygo & Lake Shore first 8s and \$24,000 second 7s; \$2,765,000 general mortgage 5s. The total amount is \$9,248 per mile of road; the interest charge is \$224,410 yearly.

The earnings for the year were as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Freight.. .. .	\$818,572	\$950,801	D. \$132,229	13.9
Passengers.....	421,600	451,927	D. 30,327	6.7

Total.....	\$1,297,201	\$1,466,067	D. \$178,866	11.7
Expenses.....	948,513	1,000,090	D. 51,577	5.2

Net earnings.....	\$348,688	\$465,977	D. \$117,289	25.6
Gross earn. per mile.....	3,137	3,554	D. 417	11.7
Net ".....	843	1,134	D. 291	25.6
Per cent. of exps.....	73.1	68.1	I. 5.0	

Expenses for last year include \$28,958 for taxes and \$79,430 for improvements of road and property.

The expenses for last year were divided as follows:

	Amount.	P. c.
Conducting transportation.....	\$415 129	32.0
Maintenance of motive power.....	68 299	5.3
Maintenance of cars.....	101 869	7.8
Maintenance of way.....	236 964	18.3
General expenses.....	126 222	9.7

In this statement, maintenance of motive power includes only repairs of locomotives, the cost of fuel, engineers and firemen and other running expenses being charged to conducting transportation.

Renewals included 1,166 tons of steel rails and 145,749 new ties. Two bridges were renewed and many other improvements were made.

The result of the year was as follows:

Net earnings, as above.....	\$348,688
Interest received.....	4,072
Total.....	\$352,760
Interest on bonds.....	224,080
Surplus for dividends.....	\$128,780
Surplus from previous year, less dividend, Feb. 16, 1885.....	142,744
Surplus, Dec. 31, 1885.....	\$271,524
Dividend for 1885 (2 per cent.), paid Feb. 15, 1886.....	123,004
Balance, total undivided surplus.....	\$148,520

The dividend paid for the year was 2 per cent., against 3 1/2 per cent. for 1884. Expenditures charged to construction account were \$2,968; equipment, \$4,340; total, \$7,326.

The train and car mileage was as follows:

Surplus, Dec. 31, 1885	\$271,524
Dividend for 1885 (2 per cent.), paid Feb. 15, 1886.....	123,004
Balance total undivided surplus	\$148,520

Average train load:
Passengers, No..... 30.8 25.5 I. 5.3 1.3 5.1
Freight, tons..... 97.5 104.2 D. 6.7 0.4

The earnings per train mile last year were: Passenger, \$0.68; freight, \$1.46; average, \$1.10; expenses, \$0.50; net earnings, \$0.30.

Locomotive service cost 17.58 cents per mile run. Locomotives ran 1.26 miles to each revenue train mile.

The traffic for the year was as follows:

Ar. train load:				
Passengers, No.....	36.8	25.5	I.	1.3
Freight, tons.....	97.5	104.2	D.	6.7

The earnings per train mile last year were : Passenger \$0.68; freight, \$1.46; average, \$1.10; expenses, \$0.80; net earnings, \$0.30.



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

BUILDING RAILROADS FOR REVENGE.

Some newspapers recently have been having much to say as to the "revenge" which two great railroad companies are likely soon to take on rival companies which have done something to affect their profits. A New York paper says that when President Garrett returns from Europe he will probably begin a "lively trunk line war," to punish the Pennsylvania for shutting it out of New York, and a Chicago journal says expressly that the Illinois Central is about to expend many millions of dollars for the purpose of punishing the Chicago, Burlington & Quincy for some grievances, the chief of which seems to be the condemnation of some of the Illinois Central's right of way near Galena for the use of the Chicago, Burlington & Northern.

These are only samples of charges often made, and doubtless usually thoughtlessly and flippantly made, but they ought to furnish cause for a libel suit, for what is charged is really the intent to commit a great crime, worse than any safe burglary or highway robbery, not only because the sums involved are immensely greater than the amount of all the thefts and defalcations in the country, but because if expended, as charged, to "punish" rivals they are taken from the proprietors of railroads by their own trustees, whom they have chosen to protect their property and who beyond all other men are bound not to waste it. Whatever the conduct of a competitor, no railroad management is justified in making expenditures of its stockholders' money to cause that competitor harm. That would be doing their own stockholders another and usually a much greater injury than the management of the rival company had already done them. Every railroad manager should resent such charges as he would a charge of theft.

Nevertheless there often happens what may easily give color to such a charge. The management of a railroad from New York to Buffalo might undertake the construction of a branch to Pittsburgh after and because the management of a railroad from New York to Pittsburgh had built or begun a branch to Buffalo. But it could not properly do so to punish the rival, but only to protect its own company. Unless by building the branch it expected to make its profits larger than they would be without it by at least the interest on the cost of the branch, it would be sacrificing instead of protecting its company's interests. Then, it may be asked, why did it not build the branch before? In refraining from building the branch was there not neglect to promote the interests of the company? Probably not.

It is evident that if there were none but through traffic, two roads at the same rates could make larger profits (over minimum interest on cost) from the Buffalo and Pittsburgh business than two roads and

two branches. But when the Pittsburgh road builds a branch to Buffalo, the Buffalo road is deprived of part of its business and has motives for building to Pittsburgh that did not exist before, or perhaps it is better to say that it has not the motives for keeping out of Pittsburgh that did exist before. It does not build to Pittsburgh to punish the other road, however, but to benefit itself. Assuming the traffic to be equally divided at both places and the rates to remain unchanged, each road would be worse off by the interest on the cost of the branch, but neither suffers so much as if its rival had a branch and itself had none.

The situation is never so simple as this, however. If it were, nothing could excuse the company which first built the branch to its neighbors' source of traffic. Often one of the places is much more important than the other, and the branch to Buffalo might get, with an equal division, twice as much as the branch to Pittsburgh. In all cases, however, the branch gets some local traffic, and such a line often becomes indispensably necessary. One of the branches might be and not the other. Now, one branch having built, the other line suffers all that it can be made to suffer, and then the only question for its proprietors is whether a branch of their own to the rival line will return more than interest on its cost. If so, it is best for them to build it, though it may not earn nearly as much as the other company's branch. If the branch is not needed for local traffic, then it, causes an unnecessary expenditure of capital, so far as the community at large is concerned, like much of the railroad construction where there are no restrictions on it, but in this way the owners of railroads may protect their interests. But in fact most (not all) of these branches are needed, and the effect of this kind of competition in railroad construction is to compel the through traffic to assist in the support of a great number of lines instead of a few.

One good four-track railroad between New York and Chicago could readily handle all the through traffic between the two places, which is now divided among six roads over the eastern part of the route and eight on the western part. Are there, then, five roads wasted? Very little of them. If all the through traffic had been confined to the New York Central, for instance, the Erie, the Pennsylvania and the Baltimore & Ohio could not have been built until long after they actually were constructed, and the local rates on them to-day would necessarily be very much higher than they are, and the passenger service vastly inferior. The reaching out by many companies for the business at great traffic centres, like Buffalo, Pittsburgh, Chicago, St. Louis, Kansas City and St. Paul, has covered and is covering the country with a close net-work of railroads not all necessary or advantageous to the community, but in the aggregate of immense benefit, as measured by the increase in the value of land. Parallel lines or other through lines once being built, they are interlaced with each other more and more, largely in this way, and very long lines are often built which but for the through traffic which they reach would never have been thought of, though the through traffic may after all yield much the smaller part of its support, and may be perfectly provided for without it. We see an instance just now in the Chicago, Burlington & Northern, which gives a line for a large extent of territory in Wisconsin near the Mississippi River, which would never have got one, perhaps, but for the through traffic.

Doubtless in many cases such lines have disappointed the expectations of those who planned them, and have injured their owners as well as competing companies, and it is very much to be feared that this will be the case with some of the many lines now under construction in the Upper Mississippi Valley. But if they are failures so far as their owners are concerned, all of them will be advantageous to some part of the community and most of them, probably, will be in the aggregate of public advantage. And though a new line is usually at a disadvantage, in some cases where there are losses they may be by the old rather than the new lines, largely because the capital for the new ones is obtained at a very low rate of interest.

But, whatever the fate of these enterprises, it must be granted that they are undertaken for the benefit of the companies that build them, and not to injure their rivals, or else that the managers of these companies are a particularly atrocious set of swindlers, who not only destroy property, but destroy the property which they have been appointed to protect, and do it without advantage to themselves or their friends, but purely to gratify their hatred of some one else. This is an aspersion which no one should willingly rest under. Perhaps it would be heard less frequently if every project for new branches or extensions were

accompanied by a statement of the advantages that are expected therefrom, and if there were less careless talk by the railroad men themselves about the disadvantages which their rivals might suffer thereby.

THE BURLINGTON TESTS OF TRAIN RESISTANCE.

It was certainly fortunate that the necessity of avoiding all possible grounds for dispute or doubt as to the results of the Burlington brake tests resulted in bringing out the interesting evidence as to the resistance of freight trains which appeared in our last issue. It had only a slight and contingent importance for the brake tests proper; for although it was possible that a handle might have been made of some disputed point by a disappointed competitor, yet it was extremely unlikely that any probable difference in an assumed rate of train resistance, when the whole of it plays so small a part in bringing a train to a stop in a brake test, would appreciably affect the result.

Nevertheless, this was possible, especially in a case which actually arose, that it would be questionable whether a brake did any work at all; and as the whole time occupied in making the tests illustrated and tabulated elsewhere was only half a day—being the time necessary for three trains to make a run of about eight miles each—it must be considered as well bestowed even for the brake tests proper, while the evidence which it gives as to the actual resistance of entire freight trains, including the engine and head resistance as well as that which can be measured by a dynamometer car, is certainly the most definite and exact as far as it goes, and probably the most valuable, of any which now exists.

In order that the extreme delicacy, precision and simplicity of this method of getting at train resistance may be more fully appreciated, we tabulated the results more fully than we otherwise should have done, since some valuable tests as to matters which still remain doubtful might be made in the same way, by any one disposed to do so, with but very little trouble. A method so simple, which is accurate enough to betray three times in succession the previously unsuspected fact, that a few inches of extra ballast had been used in the hollow of a grade since the available levels were taken, may well be more widely known and generally used.

While the tests recorded do not cover as wide a range as might be desired, we do not conceive it to be possible that any of the observed resistances engraved on the diagram are in error by more than 5 to 10 per cent. The irregularities which appear are, for the most part, actual irregularities. It is to be remembered that the vertical scale of the diagram is usually large.

The most salient fact in the test, perhaps, is the contrast in the resistance of various trains under the same conditions. The Westinghouse train showed the lowest resistances throughout. The American train was highest, and the other two trains came in between. In part, the differences are easily explained. The Westinghouse cars were in prime condition, neither old nor new, and taken fresh from service. We may well believe that they best represent what is attainable in service. The American cars had only run some 400 miles from the shop where they were built to the test track. Wheels and bearings were both new, and the cars could not be expected to show a low train resistance.

But the Lehigh Valley and Indianapolis, Decatur & Springfield cars were not new, and why they should show so much higher train resistance than the Westinghouse train is not clear. All the trains alike had the advantage of 10 or 15 miles continuous run just before entering the "gravity" test, so that the journals were well warmed up for service. The cars had probably been standing still a good deal in the three months before the tests, which may have affected the result. At any rate, the contrast exists and can only be due to some slight difference of conditions which would be readily removable.

A still more noticeable feature, perhaps, is the very small effect of velocity to increase resistance. Unfortunately, the part of the runs made at the lower speeds was made on tangents, while most of the run at the higher speeds was made on curves. Even that part of the run, however, which was made on tangents—which includes speeds from 22 miles per hour down—shows that between 22 and 10 miles per hour there was no noticeable difference of resistance. If anything, the higher speed seems rather to have decreased resistance.

For purposes of comparison we had plotted on the diagram a curve showing a nondescript formula for train resistance whose only known merit is that it would give the lowest resistances and least increase

from speed for which there is any kind of authority, viz.:

$$R = 4 + \frac{v^2}{181.5}$$

The "4" represents a lower constant for train resistance, apart from the increase due to speed, than there is really any authority for, since it does not refer to loaded cars alone, but includes the engine resistance also, including its internal friction, and covers a half train of empty cars, which have a higher rolling resistance per ton than loaded cars; $\frac{3}{4}$ to 4 lbs. per ton for loaded cars only is about the accepted figure.

The last term is taken bodily from D. K. Clark's old and now well-known formula:

$$R = 8 + \frac{v^2}{171} \text{ for tons of 2,240 lbs.}$$

which gives for tons of 2,000 lbs.:

$$R = 7.14 + \frac{v^2}{181.5}$$

This formula has obtained a currency much greater than was justified by the basis of experiment on which it rested. Nearly all modern results show a faster increment from speed. It is selected only as showing the lowest rate of increase of any formula entitled to credence.

Yet the Westinghouse train, which may be assumed to come nearer to representing the ordinary conditions of practice than any other, fell distinctly below this. The slight curves where the higher speeds were made complicate the question, but the curves must have had some resistance and—passing the reason why for the moment—we have assumed it at $\frac{1}{2}$ lb. per ton per degree of curvature, and showed by dotted lines, with points marked W (Westinghouse), E (Eames) and A (American), the tangent resistances thus obtained. It will be seen that, after making this allowance, by results with the Westinghouse train, an increase of freight train speed from 15 to 35 miles per hour does not increase resistance by more than 2 lbs. per ton, viz.: 6 lbs. against 4 lbs., and that a formula for the actual resistance of that train, within the limits of 15 and 35 miles per hour, would be the extraordinarily low one:

$$R = 3.4 + \frac{v^2}{367}$$

This is a striking and important result, going far to establish the wisdom of higher freight speeds, as soon as trains are properly fitted up with good power brakes and with draw-gear that will not give way six or eight times a day, as it did regularly with the heavy trains at the Burlington brake tests.

When we come to compare results with the Eames and American train, this conclusion is much strengthened, since it is difficult to find evidence in those tests that speed had any effect at all without assuming that the curve resistance at the higher speeds was almost inappreciable.

It will be seen that the resistance lines of the American and Eames trains cross each other in this way:

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This may appear too improbable to be correct, but this is not necessarily so, for this reason: The cars in each train were not mixed, as they would be in service, but were all built at about the same time in the same shop. As we know that freight trucks are never, except by accident, precisely square, it is not unnatural that the errors in such a single lot of trucks should tend to be in one direction, and as the track on the first section computed was a long curve to the right, on the next to the left, and on the next to the right again, if the trucks were even a very little out of square the resistances would be somewhat increased on the one and decreased on the other. A correction of this kind of about $\frac{1}{2}$ lb. per ton per degree of curve would practically eliminate the error.

Therefore, taking these two runs together, there is practically no indication that increase of speed brings any increase of resistance, and the evidence of the diagram as a whole, that an increase of freight speeds from 15 to 30 miles per hour would not increase train resistance more than about one pound per ton, is very strong—not so strong that it may not be refuted, but strong enough to require very good evidence to refute it.

This, of course, does not mean that the average speed of freight trains could be doubled without harm. On up grades this might not be possible, as it would increase too much the horse-power demanded of the engine. But on level and down grades, where this is not a serious consideration, there is no reason apparent but lack of good brakes and couplings why speed may not be made greater with very great advantage. We shall probably hereafter approximate more nearly to the English practice of running freight trains at about 25 miles per hour, although it is to be hoped (and con-

fidently expected, or half the roads in the country would be bankrupted) that we shall not imitate likewise the English average train-load, in which practice abroad appears to be sadly behind us, after making all due allowances for difference of conditions.

In respect to curve resistance it hardly need be said that the diagram very strongly indicates that the curve resistance at high speeds is very small indeed. If we should assume it at $\frac{1}{2}$ lb. per ton for the lower speeds, and $\frac{1}{4}$ or $\frac{1}{2}$ lb. per ton per degree for the higher speeds, the diagram gives very much more rational indications as respects the effect of speed on resistance, although not making enough change to modify appreciably what we have said about it. Precisely such an effect of speed on curve resistance was observed by Mr. A. M. Wellington in the tests made at Cleveland, O., in 1879, where it was found (Transactions Am. Soc. C. E., 1879, p. 51):

"The resistance of curves decreases materially with the velocity, and appears to be greater by a considerable percentage in the first 200 to 500 ft. than on the rest of the curve."

The basis of fact is too small to attempt to draw any positive conclusions other than this: that as the effect of the curvature and the higher speed together was less than might be expected from the latter alone, neither can be large, and one or the other is presumably very small.

The only other data as to train resistance of the same nature and determined in the same manner as this are given in some experiments by Mr. C. H. Hudson, computed and discussed in our issue of March 27, 1886, which, it is of interest to note, gave strikingly similar results.

The train experimented with in that case consisted of an ordinary American 17 × 24 in. engine, as in these tests, but followed by only 15 loaded gondola cars, averaging something over 24 tons each. In such a train the resistance per ton would be somewhat decreased by having all the cars loaded but increased by the larger proportion of the engine weight to the total. The tests were mostly at speeds below 12 miles per hour. The results we found to be as follows:

	Lbs. per ton.
Experiments 1, 2, 3, 4 and 5, on same stretch of 1 per cent. up grade, cars and engines in ordinary order, 34 × 64 in. journals, fair track, joints somewhat down, 6.26 to 8.82 lbs. per ton, averaging.....	7.17
Experiments 8 to 13, level track, of same class, different trains:	
Experiments 10 and 12, with favoring rear wind, av.....	3.50
Experiments 8, 9, 11 and 13, no wind.....	4.45, av.
Experiments 14, 15, 16, 17, 20 ft. up grade (av. speed 12.85 miles per hour).....	5.10
Experiments 18, 19, 20, 21, 22, in same vicinity as above (av. speed 6.20).....	5.57
Extreme fluctuation of experiments 8 to 22, 3.44 to 6.16 lbs. per ton.	

For similar speeds we had the almost precisely identical results:

	Lbs. per ton.
Westinghouse train.....	3.80 to 4.50 averaging 4.32
Eames and Widdfield & Buton.....	6.50 to 7.04 " 6.84
American train (too new for fair comparison).....	7.88 to 9.30 " 8.50

The dynamometer car being interposed between the engine and the train in all these Burlington tests, its record afforded means of separating the engine and train resistances by showing whether the train was crowding upon the engine or not and with how much pressure. As the scale of the dynamometer diagram was 6,000 lbs. per inch, however, and the greatest additional resistance of the engine only a few hundred pounds, in recording which whatever lost motion or spring there was in the mechanism was concentrated, no great exactitude could be attempted in this respect, but in the main there was very little evidence of any considerable excess of friction in the locomotive.

This was especially noticeable in the case where it would be least expected, the test of the Westinghouse train with its low resistances of 4 + lbs. per ton. The dynamometer spring was sometimes in tension and sometimes in compression, indicating quite strongly that the entire resistance of engine and tender, including the force required to move the pistons, valves and excentrics and the head resistance at 20 miles per hour, was not more than 2 or 3 lbs per ton in excess of the average for the train, a dead calm then prevailing.

FALSE DECLARATION OF THE NATURE OF FREIGHT.

The trunk lines have agreed to reduce the rates on a large class of cotton goods from 75 to 50 cents per 100 lbs. from New York to Chicago, and on that basis to other points, making a special class of these goods, for the second-class rate is 60 cents and the third-class 45.

The conditions of this great reduction in rates, which applies to a very large amount of shipments from all the seaboard cities, are that the goods to which the new rate applies shall be delivered with the designation "cotton piece goods" stenciled on the package

with the name of the shipper; that any shipper who describes goods of a higher class with this description, in order to secure the lower rate, shall be required to pay the full first-class rate on future shipments; and that the shippers who wish to avail themselves of the reduction join in endeavoring to secure legislation making it a misdemeanor to describe goods falsely for the purpose of securing rates lower than those of the class to which the goods belong.

This is probably the only country in the world where there is not already legislation of this kind, and here the lack of it has led to a great amount of misrepresentation which is precisely of the nature of obtaining money by false pretenses, and often makes it extremely difficult for an honest merchant to meet the competition of his dishonest competitor. For some time past there has been a bureau of inspection in New York, which has detected a great amount of misrepresentation of this kind, and two or three years ago a lumber dealer was expelled from the Chicago Lumber Exchange for shipping great quantities of lumber as salt, which enabled him to undersell other merchants at an important market, to say nothing of the loss caused the railroad company.

To show how this matter is regarded in other countries, we have collected the following from the legislation of Great Britain, France and Germany:

The law of Great Britain on the subject is as follows (8 Vict., c. 20, § 98, 99, Railway Clauses Act):

"98. Every person being the owner or having the care of any carriage or goods passing or being upon the railway shall, on demand, give to the collector of tolls, at the places where he attends for the purpose of receiving goods or collecting tolls for the part of the railway on which such carriage or goods may have traveled or be about to travel an exact account in writing signed by him of the number or quantity of goods conveyed by any such carriage, and of the point on the railway from which such carriage or goods have set out or are about to set out, and at what point the same are intended to be unloaded or taken off the railway; and if the goods conveyed by any such carriage, or brought for conveyance as aforesaid, be liable to the payment of different tolls, then such owner or other person shall specify the respective numbers or quantities thereof liable to each or any of such tolls."

"99. If any such owner or other such person fail to give such account, or to produce his way-bill or bill of lading, to such collector or other officer or servant of the company demanding the same, or if he give a false account, or if he unload or take off any part of his lading or goods at any other place than shall be mentioned in such account, with intent to avoid the payment of any tolls payable in respect thereof, he shall for every such offense forfeit to the company a sum not exceeding ten pounds for every ton of goods, or for any parcel not exceeding one hundredweight, and so in proportion for any less quantity of goods than one ton, or for any parcel exceeding one hundredweight (as the case may be), which shall be upon any such carriage; and such penalty shall be in addition to the toll to which such goods may be liable."

We see in this provision made for the use of railroads purely as toll roads, like canals, which was expected in their early days; but the propriety of charging different rates for different kinds of goods, and requiring a description of the goods and providing a penalty for misrepresenting them, was fully recognized.

In France a false declaration of the value of goods made by the shipper is punishable in a manner which shows how the moral quality of such an act is regarded. In a case tried by the Commercial Court of Marseilles a shipper was found guilty of having marked a package of children's toys and *articles de Paris*, which belong to a higher class, as "hardware," which is in a lower class. The shipper offering to pay the difference in the rates, the Court declared this insufficient, saying that it was well established by previous decisions that persons who have employed falsification in transportation should indemnify the company for all the expenses of the inspection and supervision which such false declarations make necessary, and be required to meet the expenses of warning others not to follow their example. The Court, therefore, assessed damages aside from the amount of the difference in rates, and made the following order:

"The Court orders the publication of this decision in one newspaper at Paris and one at Marseilles, at the expense of the defendant, by way of reparation for the false declarations by him made."

It is peculiarly appropriate that the person guilty of obtaining valuable services by false pretenses should be compelled by law to advertise himself to the community as a cheat.

In Germany the law provides that if a shipper of freight makes a false declaration of goods transported, representing them to be of a class on which the freight is less than that on the class to which the goods actually belong, not only may the deficit in freight be collected, but an additional sum, called the "conventional penalty." The column heads of the way-bill calling for a description, and the statements on it of the rules by which rates are governed, are held to be sufficient notice to the shipper. The courts have always held that the receiver of the freight is liable to this penalty and recently the Supreme Commercial Court of the Empire has held that a forwarder is also liable. In 1879, a man who makes it his business to attend

to shipments of freight—a commission shipping broker, in fact, such as attend to most railroad shipments in Germany—consigned several car-loads of parts of machines intended for a Russian rolling-mill to another forwarder at a Baltic port, way-billed as "shaped iron" and "iron parts of marine engines," the rates on which are lower than on machinery such as was shipped. Some time after the freight had been delivered by the railroad and shipped to Russia by the forwarder, the railroad company, having learned of the false declaration, demanded the difference in freight of the forwarder at the Baltic port, who paid the freight as given on the way-bill when it was delivered to him, and sued him for it and the penalty. The defendant claimed that a penalty could not be inflicted upon him, as it was not even pretended that he had any knowledge that the declaration of the nature of the freight on the way-bill was false, and as he had forwarded the freight to the consignee before the demand on him was made, he had no means of securing reimbursement from the consignee. But the Court held that this makes no difference. The law makes every receiver of freight liable for the freight money on the receipt of the freight and the way-bill; and if there is a false declaration in the way-bill, he is liable for the penalty also, precisely as if it were a part of the rate, and without any regard to his knowledge of the falsity of the declaration. For that matter, it is not even necessary that the shipper who made out the false way-bill should have known that it was false. The penalty is for its being false, not for making it so.

This law is evidently based on the principle that it is the duty of those who handle the goods, and who alone when goods are packed can easily know what they are, to describe them accurately; and if they do not take the trouble to know what they are, they must suffer a penalty for their negligence.

There will probably be no opposition on the part of the merchants and the great body of shippers to the legislation asked for, and it will be welcomed by many of them who have suffered by the false declarations of tricky competitors in trade, who in this way have got their goods carried for less than what honest men had to pay.

CHICAGO SHIPMENTS EASTWARD IN JULY.

The reported through shipments of freight from Chicago, not including live stock and fresh meat, nor shipments over the Chicago & Atlantic Railroad, were 117,457 in the month of July. The Chicago & Atlantic shipments were not so large then as they had been, and including those dispatched from the Wabash station were probably not more than a sixth of the whole, which would make the total July shipments about 141,000 tons. In previous years the July shipments have been:

1879.	1880.	1881.	1882.	1883.	1884.	1885.
145,788	160,187	259,253	95,039	138,656	152,828	180,972

Thus if the estimate of 141,000 tons for this year is correct, the shipments last July were less than in any of the seven previous years except 1882 and 1883, and very little more than in 1883. The shipments were also less than in any previous month of this year; but that is usual, and the decrease from June was much less than usual, being only 5,740 tons, while the decrease from June to July was 56,497 tons last year, 129,337 in 1884, and 20,766 in 1882. Last year and the year before rates were advanced about the end of June to 20 cents, only 5 cents less than this year; so that there was a profit on the business when in previous months with a very large traffic there was none. Still the profit per ton this year in July must have been nearly twice as great as last, and the aggregate profit considerably greater and still greater than in 1884, about the same as in 1883 (with the same rate), greater than in 1882 (because of much greater traffic), and also greater than in 1881, when July was the first month of the railroad war and presumably there was no profit on the large business. Thus though the business was by no means good last July, it was probably about as profitable in the aggregate as in any other year since 1880—chiefly because there has been little profit in that month. The business being divided among more roads, the old ones have profited much less by it than in 1883, and very much less than in 1880.

For the seven months ending with July the reported Chicago shipments this year have been 1,066,955 tons. For the last five of these months the Chicago & Atlantic shipments were not included, and much of the time it carried a very large part of the whole, 170,000 tons would probably be an excessive allowance for that road for the time, and this would make the total for the seven months only 1,237,000 tons, while for the seven years previous they had been:

Year.	Tons.	Year.	Tons.
1879.....	1,633,930	1883.....	1,398,411
1880.....	1,344,766	1884.....	1,764,353
1881.....	1,628,789	1885.....	2,011,914
1882.....	1,191,197	1886 (?).....	1,237,000

Thus the shipments this year were less than in any other except 1882, which was after the disastrous harvests of 1881. There was, however, a great deal of traffic carried at unprofitable rates in all the years when the shipments were very much more than this year, except 1881, when July was the only month when rates were very low. In 1879 the rates began to go down early in the year, and were as low as 10 cents per 100 to New York part of the time, and only began to recover in July; in 1884 and 1885 there was no profit for three full months, when most of the shipments were made, and not much in the other months. Still, the shipments this year were considerably less than in other years when rates were maintained—8 per cent. less than in 1880, when the rates were 40 cents for two months, 35 for one and 30 for the other four, against 25 for all seven months this year; 10½ per cent. less than for the first six months of 1881, when the rates certainly averaged more than 30, in spite of some cutting; and 10½ per cent. less than in 1883, when the rate was 30 cents for half the time and 25, the same this year, the other half. Thus nothing can make this year's business satisfactory in amount, nor is it in profit except in comparison when there was little or none. Add that there were only five roads to divide the business at Chicago in until 1881 and only six until 1883, while there are eight now, and it need not be said that the old roads have made very much less out of the business than they made in former years when rates were maintained. Less total traffic, more carriers, lower rates—all these make the Chicago freight much less important to any one road than it once was.

The movement of live stock and dressed beef has been much more satisfactory. As this is chiefly for current consumption in the East, it varies in quantity very much less than the other freight shipments, but on the whole increases with the growth of the population to be supplied. This would be almost universally true but for the shipments of hogs to be packed in the East, as the product need not be consumed immediately nor in this country at all. The total live stock and dressed beef shipments for July and the half-year were, in tons:

	1886.	1885.	Increase.	P. c.
July.....	74,452	66,037	8,415	12.8
Seven months.....	519,895	488,447	31,448	6.4

The shipments by the Chicago & Atlantic, as well as those by the other roads, are included here. We see that the total quantity exceeds one-half of the total estimated quantity of other through freight, while the rates received to New York are from \$7 to \$13 per ton, against \$5 to \$6 for all but a small part of the other freight, the average probably being something like \$9, so that the gross earnings for the live stock and dressed meat must have been nearly as great as those from other freight and the net earnings perhaps greater. This is a matter to be borne in mind when considering the value of the Chicago business, and it has the greater weight because this traffic has been profitable less frequently even than the other freight. There have very likely been but one or two years when this traffic has been as profitable as it has been this year. We cannot say this positively, however, because the course of live stock rates is much less fully known than the course of other rates. They have often been higher than this year—regular rates have always been higher—but regular rates have not often lasted long. On the other hand, the live stock and dressed meat rates were at their lowest during the first two months of this year.

There are two classes of this traffic—the live cattle and dressed beef—which are of especial interest now because of their rivalry with each other. We have followed the course of them month by month since the rates were advanced March 1 and made 35 cents per 100 lbs. to New York for cattle and 65 cents for dressed beef. In July the shipments of them from Chicago were in tons:

	1886.	1885.	Inc or Dec.	P. c.
Live cattle.....	30,662	30,809	- 147	0.5
= beef.....	17,477	17,561	- 84	0.5
Dressed beef.....	26,547	19,082	+ 7,465	39.0
Total beef.....	44,024	36,643	+ 7,381	20.1

There was, we see, very little decrease in the cattle shipments this year, but a very large increase in the shipments of dressed beef. Of course there can have been no such increase in consumption as 20 per cent., but it is possible that the country has taken a larger part of its supply than usual from Chicago. Western beef has been very cheap, and probably it has. An increase in exports, either of cattle or fresh beef, might have explained the change, but actually there was a decrease of 50 per cent. in the cattle exports and of 20½ per cent. on the fresh beef last July. The dressed beef shipments from Chicago were considerably larger than in any other month of any year.

These shipments in successive months of this year have been, in tons:

	Cattle.	beef.	Dressed beef.	Total beef.	P. c. dressed.
January.....	30,396	17,325	22,328	39,653	56.3
February.....	27,836	16,096	21,431	37,537	42.9
March.....	25,085	14,729	18,892	33,621	56.2
April.....	31,817	18,153	20,176	38,329	52.6
May.....	25,305	14,854	23,163	38,017	61.0
June.....	28,000	15,960	23,213	39,173	59.2
July.....	30,662	17,477	26,547	44,024	60.3

The total quantity of dressed beef was greater last month than in any other, and the percentage dressed has been exceeded but once. Probably the exodus from New York in the summer has an appreciable effect on the demand, much the larger part of the city's supply arriving on the hoof, while nearly all the interior Eastern supply now comes dressed in refrigerator cars. The country which takes dressed beef has so large an accession of beef-eaters to its population in summer that the consumption of it naturally is increased. But the difficulty is to account for the shipments of cattle, which were as large in July as the average, and larger than in May or June. No small part of these, however, go only a few miles from Chicago, to Hammond, and are forwarded thence dressed.

For the seven months ending with June, the live cattle and dressed beef shipments from Chicago have been, in tons:

	1886.	1885.	Inc. or Dec.	P. c.
Cattle.....	199,230	213,545	- 14,315	18.2
= Beef.....	113,561	138,821	- 25,260	18.2
Dressed beef.....	155,752	121,797	+ 33,955	27.8
Total beef.....	269,313	260,618	+ 8,695	3.3
Per cent. dressed.....	57.8	46.7	+ 11.1	...

If the Hammond shipments were included, as they should be to show the course of the trade, very likely we should find that about three-fourths of the beef shipped from Chicago reaches its destination dressed in refrigerator cars. Whether the Hammond shipments have increased as much as the others we have no means of knowing, but the other shippers of dressed beef, who handled a little more than four-ninths of the total beef supply from Chicago last year, have added another ninth this year and last July shipped more than ever before, and the business has grown rather faster than it did last year. The average daily shipments in successive months have been, in tons:

	Jan.	Feb.	March.	April.	May.	June.	July.
1886.....	720	765	609	671	747	774	856
1885.....	579	536	452	600	625	612	616

The daily average this year was 136 tons larger in July than in January; last year only 37 tons larger. Counting from March, which in both years was the month of smallest shipments, the increase in July was 164 tons last year and 247 tons this. Thus there has been no arrest of the rapid growth of the dressed beef business, but there must be before long, because it has already occupied the larger part of the field.

The Camden & Atlantic Catastrophes.

The two almost coincident collisions which occurred on Sunday of last week (Aug. 22) on the Camden & Atlantic Railroad are certainly a discouraging commentary on the methods of administration which prevail on even our first-class lines. The result of the official investigations which the Superintendent says that he has made he "preferred not to make known at present," the reports say, but enough is clear from the full and detailed accounts of the facts which have been published to make it reasonably certain that the blame for one of the "accidents" at least can be charged up justly only against the system of administration and discipline.

The Camden & Atlantic is a nearly straight line, 59 miles long, from Philadelphia to the sea-coast. It does, in the summer time, an enormous excursion passenger business, Atlantic City being Philadelphia's Coney Island. Its regular time table shows 19 trains a day each way, of which 10 are through expresses, and these are supplemented by frequent and heavy extra trains, as is natural from the nature of its traffic. It has little other business, the only freight traffic being carrying supplies for these excursionists, and "garden truck" to Philadelphia.

Excursion traffic is universally known to be more dangerous than ordinary passenger traffic, and a line handling passenger traffic (if any) almost exclusively, and in crowded trains, is with reason expected to be more cautious than one, most of whose trains are freight. The Pennsylvania Railroad, which controls and operates the Camden & Atlantic, is likewise supposed to be one of the best managed lines in the world. Here if anywhere, therefore, we might expect a thorough system of administration at least, so that, if an accident happened, it would not be from gross carelessness, nor from neglect of any of the more ordinary precautions against accident.

Yet this is precisely what appears to have occurred. The causes for one of the "accidents" at least were such that if they were permitted to obtain generally there would be every chance for almost daily accidents on every considerable line. In a word, one train

was ordered to a meeting point without either the other train or the station agent at the meeting point being definitely informed of it. The first train naturally failed to quite reach the side-track in time, and the usual result followed.

The regular newspaper train had left Philadelphia at 4 a. m., as usual and made its usual run of 60 miles in as many minutes to Atlantic City. Contrary to the usual practice, it was ordered to return at 7:01 a. m. to Philadelphia, instead of lying over till night to return. The regular Sunday morning excursion train was to leave, and unhappily did leave, Philadelphia one minute later, at 7:02, seven minutes after its schedule time. The newspaper train was ordered to take side-track at Ancora to let this train pass, having less than one minute's leeway on its time for doing so; it would appear, but having been ordered to clear all trains by three minutes.

The excursion train running against it, we are naively told, had "taken on some passengers" at the next station back, and been "given notice" that the track was clear ahead, "which the conductor naturally took to mean clear to the next stopping place," which was beyond the established meeting-point. In other words, this train of seven loaded passenger cars had been allowed to go forward to destruction without the slightest intimation from any one that there was an opposing train on the track which it was to meet and pass at an intermediate side-track, and which would come (at least it did come) within about a minute of occupying the main track on its time.

Then began the usual train of favoring circumstances to insure that the mine which had been laid should actually go off. In the first place the passenger engineer's watch was fast, as he claimed, and even by his watch he arrived at Ancora a minute and a half ahead of time. In the second place the young fellow who officiated as operator and signalman at this lonely station had gone off to breakfast "leaving the block signal 'safe' displayed." No blame appears to be thrown on him for doing this. It was apparently the regular thing for him to go to breakfast at this time, and he had received no contrary orders so far as appears, nor learned that two trains were shortly to meet at his station. Possibly an attempt was made to give him orders after he had left, but this seems unlikely.

In the third place, as luck would have it, there was a sharp curve in this generally straight line immediately beyond the Ancora side-track, which made it a rather objectionable place to have a side-track, if it could be avoided.

Result: The newspaper train was just approaching the sharp curve from the east, wholly guiltless of error, and had begun slowing down to take side-track. The excursion train had passed the station, seen the safety block signal, which is only what it had a right to expect, noticed that, even by a fast watch, it was a little ahead of its schedule, and was slowing down somewhat to get on time when the collision occurred. The newspaper train was likewise slowing down to take side-track or the disaster would probably have been a memorable one. As it was, both engines and the cars next behind them were badly wrecked and seven or eight persons injured, but no one killed.

The engineer of the excursion train was blame-worthy in two minor respects, having a watch fast and being a little ahead of time between stations even on a clear track, but it is clear and practically admitted that no real responsibility for the collision attaches to any of the employés. Neither is any attempt made to throw blame upon the dispatcher, nor could there well be, for there was none in the ordinary sense. The whole blame, therefore, falls on the system of operating the road.

This is clearer from the facts of the second collision on the same day, which happened only eight miles off and some 14 hours later, between two of the innumerable passenger extras on this line; a train of empty passenger cars going down to Atlantic City to bring back the crowd, and an extra express from the seacoast loaded with passengers. The empty train

"Had orders to take the siding at Berlin, and wait for the extra to pass. Owing to the prevailing dense fog the train hands were unable to see the signals displayed, and before the south-bound train could take the siding the express collided with it. Both engines were damaged considerably. Engineer Simons was the only person injured, and he but slightly."

According to another account:

"The collision was caused, it is alleged, by the failure of the engineer of the train from Atlantic City to discover the danger signal on account of the heavy fog. The train of empty cars had orders to take the side track at Berlin and wait for the excursion train to pass. The engineer of the latter, believing he had a clear track, had no knowledge of the other train until the collision occurred. The locomotive of the train of empty cars was badly damaged, while the other was only slightly disabled."

Unless these various accounts of these two "accidents" are sadly in error, it would be difficult to imagine a more dangerous and reckless system of handling an enormous passenger traffic than they betray, for they show that, at least when occasion seems to require it, it is the practice on this road to start out trains at any time without any further attempt to warn other trains than to order a signal displayed at the immediate point of danger, and not always even that. The sole chance for safety therefore hangs either upon the trains being exactly on time or upon the order to display a danger signal being properly sent, and remembered and obeyed by the agent and seen by the engineer. Substantially this system has been followed and is followed in England and on the continent, but only as respects regular trains. Sending out wild trains, whose existence even is not suspected by the trains they must pass, is a very different matter.

Perhaps another collision which happened a little over two years ago on the same road and almost at the same point, between an "excursion" and "regular" may be "not entirely disconnected," as Mr. Micawber would say, with the cause of this accident. The cause of the earlier accident, as reported in our issue of July 25, 1884, was "the failure of the engineer of the regular train to stop at the preceding station (some two miles back of where the accident occurred), where he had received orders to await the excursion train. Why he did not stop is of course unknown, as he was killed, but the conductor said that he received the orders and was positive that the engineer understood them."

Why it should be necessary for the conductor to "be positive," when written evidence should have been available, and why the conductor himself, who knew his orders, did not stop the train and save the lives of eight persons and the limbs of ten or twelve more, does not appear. There would seem to be the same evidence of something wrong in the system here, but at least this was a case in which both the conductor and engineer knew that an opposing train was approaching them. Can it be possible that the fact that they deliberately disregarded this warning, led to the conclusion that on the Camden & Atlantic it was not worth while informing them?

The strike of the Broadway street railroad men this week may be unwise, but it is certainly within the right of the men. They have been doing a certain amount of work for a certain rate of pay, and all at once the company demanded that they should do one-fifth more work—make six trips a day, instead of five—for the same pay. That is an important change, and the men have the right to refuse to work on those terms. It is as if we should notify our bakers that instead of the ten loaves of bread they have been delivering for a dollar, we should require twelve loaves hereafter. The bakers would probably have a word or two to say before we got our bread.

There is some controversy as to the time required to make the six trips, the company insisting that it is less than 12 hours a day, and the men that it is more, the point being that the company agreed last winter not to require more than 12 hours for the regular day's wages. This does not seem an important point. Actually the company has been paying the men \$2 25 a day for five trips for several months, and any increase in the amount of work required changes the position of the men for the worse. They have the right to leave the company's service at any time, and the change makes it less desirable than it was. Whether it is wise for them to strike against the change is not so certain. That depends on the company's ability to get other men at the wages it now offers and the men's ability to get other work. The work is less than was required until a few months ago, and the pay better; but it is to be hoped that the conditions are such that men doing that kind of work may have a better time of it than they used to have. Still, it is not often that so great a change in the condition of any class of people can be effected in so short a time, and it will not be surprising if the company should be able to fill the vacant places within a reasonable time; and if so, the striking employés will have made a mistake—not as to their rights, but as to their best policy under the circumstances.

It seems as if it ought to be possible, when any such changes are contemplated, to negotiate with the men concerning them, instead of arbitrarily announcing it as if they had nothing to do but accept any terms offered them. That is, it should be acknowledged that the new requirements change the contract and require the assent of both parties to it. Doubtless the relations between the street railroad companies and their organized employés, as they now exist, would make this very difficult, however.

While the circumstances in this case make it a "lock-out" rather than a "strike," the conduct of many of the men, and still more of the Belt Railroad men who went out a day later, in attempting forcibly to prevent other men from taking their places and running the cars they abandoned, of course merits punishment as well as disapprobation, and is likely to deprive the whole body of strikers of the sympathy of the public.

The Louisville & Nashville, like many other Southern companies, has had a somewhat unfavorable year. For the fiscal year ending June 30 last it reports a decrease of \$759,328, or 5.4 per cent., in gross earnings, and of \$790,368, or 13.7 per cent., in net earnings, the working expenses having slightly increased. The company operated 50 miles less road than for the preceding year, but very little of the decrease was due to that cause, the branch from Montgomery, Ala., to Selma, the lease of which was surrendered in 1885, having earned only \$91,622 in that year. The principal loss in gross earnings was on passenger business, the decrease being \$674,293, or 16.2 per cent., while the decrease in freight and other earnings was only \$85,035, or less than 1 per cent. The larger part of this decrease in passenger earnings was due to the absence of the travel to the New Orleans Exposition, which swelled the receipts in the previous year; but some of it was also due to the entrance of a new line into the regular New Orleans business, a traffic which grows but slowly and will not bear much subdivision. That the freight earnings decreased so little is the encouraging feature of the report, especially when it is considered that the wheat crop on the northern end of the line was not large, and that the business was to some extent affected by the strike at East St. Louis near the close of the year.

The surplus after paying all fixed charges was \$527,803, being \$829,806 (61 per cent.) less than in the previous year. It would have been \$60,000 greater than it was had not the Kentucky Central failed to pay the agreed rental for its use of part of the Knoxville Branch. This surplus was nearly all absorbed by the expenditure of \$503,118 for construction and improvements, which leaves a balance of \$24,685. Of this construction expenditure, \$195,058, or 39 per cent., was for the change of gauge from 5 ft. to standard gauge a work which could not well have been postponed. In addition to the amount given above, there was \$115,041 paid for construction on controlled lines, which is to be repaid by those lines, so that the actual payments were \$90,356 more than the receipts, if everything be counted.

The result on the whole is better than might have been expected, and should not be discouraging. The earnings so far this year are showing a considerable gain, and, while no extraordinary increase is probable, there is every prospect of a better year.

The value of the exports of merchandise from the United States were less last July than in June or any other month of this year except February, but this is not unusual, and the exports were much larger this year than last, having been for seven years:

1880.....	\$71,615,569	1881.....	\$54,612,492
1881.....	63,033,615	1882.....	45,752,038
1882.....	54,617,541	1883.....	52,782,707
1883.....	52,884,084		

Thus the value this year, though 15½ per cent. more than last year, was less than in any other year of the seven, though not much exceeded since 1881.

The imports in July meanwhile have been:

1880.....	\$57,304,682	1881.....	\$55,125,524
1881.....	52,422,676	1882.....	49,114,682
1882.....	65,804,878	1883.....	55,530,709
1883.....	56,980,920		

The imports last July thus were 13 per cent. more than last year, and also larger than in 1884 and 1881 and were largely exceeded only in 1882. They exceeded the exports by \$2,748,000, and they have exceeded them in every July since 1881.

For the seven months ending with July the values of exports and imports for six years, and the excess of one over the other, have been:

Year.	Exports.	Imports.	Excess of—
1881...	\$488,391,251	\$379,780,349	Exports .. \$108,610,902
1882...	396,968,307	417,592,674	Imports .. 50,624,367
1883...	451,092,306	409,106,133	Exports .. 41,986,173
1884...	398,125,007	387,882,204	" .. 10,242,803
1885...	382,087,880	340,136,811	" .. 51,951,069
1886...	389,118,549	383,937,791	" .. 5,180,758

There is an increase over last year for the seven months of \$7,031,000 in exports and of \$53,801,000 in imports, but the imports were exceptionally light last year. The export values were less than in any of the other five years, except last year; but they were largely exceeded only in 1881 and 1883. Substantially the whole increase in exports was in July, and the probability is that the large export movement will continue. The larger imports indicate greater confidence and desire to purchase goods, but it is to be noted that the increase is over last year only, and that there was very great dullness then. There has been a

large increase in imports over last year in every month of this year, and in every month except January and June it was larger than in July.

A report comes from Savannah that the Louisville & Nashville is again trying to secure control of the Central Railroad of Georgia. The basis of this rumor seems to be that there has been considerable buying of Central stock, but for whose account the purchases are made is not certainly known. The Central, of Georgia, is one of the oldest and most solid of Southern companies, owning and controlling an extensive system in Central and Western Georgia and in Eastern Alabama. For a number of years it paid 8 and 10 per cent. dividends on its stock, but the increase of competition for through business and the building of new lines into its territory have reduced its dividends to 5 per cent., and this amount has been largely drawn from the profits of the steamship line which it runs between Savannah and New York. It is still, however, a valuable property, and its control would be of considerable advantage to the Louisville & Nashville. It is quite probable that the building of the extension of the Kansas City-Memphis line from Memphis to Birmingham, which is now rapidly going on, may have something to do with this movement for control. This line is to have an outlet eastward from Birmingham over the Central lines, and may become an active competitor for some of the business which now goes over the Louisville & Nashville.

The Central Railroad stock is very much scattered; there are few large blocks held and not much floating stock. There are many small holdings and a considerable amount is in 5 and 10 share lots, owned in Georgia families who find their profit quite as much in the yearly free ride to Savannah at the time of the annual meeting as in the dividends they receive. This stock is very closely held and is not likely to come on the market, and the vote of these small holders is always an uncertain element, largely influenced by personal feeling. The late President Wadley had a very strong hold upon the small stockholders, which his successor seems to have largely inherited, and it is probable that actual ownership of a majority of the stock would be necessary to secure a change in the management.

The total amount of the company's stock is \$7,500,000 only. It is not listed or quoted on the Stock Exchange in New York, and is bought and sold chiefly at Savannah and Augusta.

July Accidents.

Our record of train accidents in July, given on another page, contains notes of 38 collisions, 49 derailments and 4 other accidents; a total of 91 accidents, in which 23 persons were killed and 88 injured.

Four collisions and 10 derailments caused the death of one or more persons each; 15 collisions, 10 derailments and 1 other accident caused injury to persons, but not death. In all, 14 accidents caused death and 26 injuries, leaving 51, or 56 per cent. of the whole number, in which there was no injury serious enough for record.

The 38 collisions killed 7 and injured 54 persons; the 49 derailments killed 16 and injured 33, while in the 4 other accidents 1 person was injured.

Of the killed 17 and of the injured 62 were railroad employes, who thus furnished 74 per cent. of the killed, 70½ per cent. of the injured and 71 per cent. of the whole number of casualties.

As compared with July, 1885, there was an increase of 15 accidents; a decrease of 5 in the number killed, and an increase of 13 in the persons injured.

These accidents may be classed as to their nature and causes as follows:

COLLISIONS:	
Rear	27
Butting	8
Crossing	3
DERAILMENTS:	
Broken frog	1
Broken bridge	2
Spreading of rails	8
Broken wheel	4
Broken axle	7
Broken truck	1
Cattle	6
Land-slide	1
Wash out	2
Misplaced switch	4
Rail removed for repairs	1
Purposely misplaced switch	2
Malicious obstruction	2
Unexplained	8
OTHER ACCIDENTS:	
Broken parallel rod	1
Loose freight car door	1
Car burned while running	1
Total number of accidents	

Seven collisions were caused by trains breaking in two; five by misplaced switches; four by mistakes in orders or failure to obey them; four by neglect to use signals at all or to use them properly and promptly; one by a car blown out from a siding.

Both the broken bridges were of wood. One failed because its timbers had been partly burned through; the other, apparently, because it was worn out and partly rotten.

A general classification of these accidents is made as follows:

	Collisions.	Derailments.	Other.	Total.
Defects of road	10	10	2	22
Defects of equipment	7	12	2	21
Negligence in operating	30	5	2	37
Unforeseen obstructions	1	10	2	13
Maliciously caused	4	4	2	10
Unexplained	8	8	2	18
Total	38	49	4	91

Negligence in operating is thus charged with 38½ per cent. of all the accidents, defects of road with 11, and defects of equipment with 24½ per cent.

A division according to classes of trains and accidents is as follows:

	Collisions.	Derailments.	Other.	Total.
To passenger trains	3	16	2	21
To a pass. and a freight	18	33	2	53
To freight trains	17	33	2	52
Total	38	49	4	91

This shows accidents to a total of 129 trains, of which 42 (32½ per cent.) were passenger trains and 87 (67½ per cent.) were freight trains.

Of the total number of accidents 63 are recorded as happening in daylight and 28 at night.

The increase over June was chiefly in the number of collisions, that class of accidents forming a larger proportion of the total than for some months past. Broken couplings were the most prominent cause of collisions, but there were also several due to misplaced switches and to failure to use signals promptly. This last-named cause of collisions is a fruitful one, and in all probability more than one of the unexplained collisions was due to it. This neglect of signals is a very curious fact, often occurring when it might be least expected. It has been remarked before now, and in other occupations than railroading, that the disregard of obvious means of safety and protection is one of the most singular tendencies of human nature. That discipline and authority should be needed to force a man to protect his own life is an anomaly, but it is nevertheless a case which very frequently happens.

No broken rails were recorded during the month. Supplying an omission made last month we give here a statement of the number of accidents for the first and second quarters of the current year, with the proportion resulting from broken rails.

	Total.	1886.	Bro. rails.	P. c.	Total.	1885.	Bro. rails.	P. c.
First quarter ..	273	23	8.4		447	67	15.0	
Second quarter ..	234	10	4.3		218	8	3.6	

This table needs no comment other than has often heretofore been made on similar showings.

For the year ending with July the record is as follows:

	Accidents.	Killed.	Injured.
August	92	37	172
September	91	25	128
October	123	36	134
November	96	19	118
December	74	31	153
January	94	40	90
February	98	21	157
March	81	49	131
April	96	25	105
May	93	23	170
June	75	33	86
July	91	23	88
Total	1,074	360	1,502
Total, same months, 1884-85 ..	1,236	328	1,550
" " " 1883-84 ..	1,405	415	1,906
" " " 1882-83 ..	1,631	470	1,836

The yearly average for the four years was 1,337 accidents, 398 killed and 1,714 hurt. The monthly average for last year was 90 accidents, 30 killed and 125 injured.

The averages per day were, for the month, 2.93 accidents, 0.74 killed and 2.84 hurt; for the year, 2.94 accidents, 0.99 killed and 4.12 injured.

The average casualties per accident for the month were 0.253 killed and 0.967 injured; for the year they were 0.335 killed and 1.467 injured.

The month was thus about up to the average of the year in accidents, but below it in casualties.

The Origin of the Southern Gauge.

The truth of history is violated by an article in a recent issue of *Engineering* on "Railway Gauge in the United States" in a manner which it is worth while to correct. It is there stated:

"The sectional feeling engendered between the states north of the Ohio and Potomac Rivers and those south of those rivers, by the issue of slavery, found vent in a somewhat curious result, and that is the difference of railway gauge between the two sections. It was originated a number of years ago by Southern politicians, who endeavored to check internal commerce by framing into the charters of Southern railways clauses fixing the gauge at 5 ft., etc."

If *Engineering* had any shadow of "authority" for such a statement, it could have been nothing better than the statement of some of the many newspaper correspondents in this country who deliberately manufacture "history" in order to make an interesting narrative, stopping at nothing which will render their story readable, unless it is manifestly absurd or known to be untrue to the great mass of their readers. Beyond denial, the Southern gauge did originate "a number of years ago," for it originated some months before the trial of the Rocket in 1829, but "slavery and sectional feeling" have enough sins to answer for without being saddled with this, for the Southern gauge originated in the most innocent way in the world, viz., in the brain of a Northern engineer, the venerable and still living Horatio Allen, who ran the first locomotive ever run in America, at Honesdale, Pa., Aug. 9, 1829, 58 days before the trial of the Rocket.

He, in common with the rest of mankind at that date, had but a faint suspicion that the lines which were then already under way in South Carolina, Maryland, New York and Pennsylvania could by any possibility be linked together into a continuous net-work, and had no suspicion at all that, even if they were, the interchange of traffic in the same cars

would be even a minor factor in the problem. He accordingly reasoned out what was abstractly the best gauge as best he could; fixed on 5 ft., and recommended that. In the valuable series of papers on "The First Five Years of the Railroad Era" which he contributed to the *Railroad Gazette* in 1884, he gives (April 11) the following account of how it all came about:

"When George Stephenson, having been Chief Engineer of the Stockton & Darlington, became Chief Engineer of the Liverpool & Manchester Railroad, he adopted 4 ft. 8½ in., the gauge of the Stockton & Darlington, as the gauge of the first railroad to be constructed for general freight and passenger transportation. There is no statement as to the grounds for this important decision.

"It is plain that there were some reasons to be complied with on the Stockton & Darlington, which made the use of that half inch of value. It is also plain that there were no such conditions on the Liverpool & Manchester. Why that liberty was not used we have no knowledge.

"When the time came for action in the United States, at the North there was also no limitation, but again the coal-mine railroad gauge of 4 ft. 8½ in. was adopted. In only two cases were there omissions to follow the precedents thus established.

"One was by the South Carolina Railroad Company, who, in accordance with the report of the Chief Engineer (Horatio Allen himself), adopted 5 ft. as the width of the gauge on their railroad.

"In that report is presented, as far as known at that time, the conditions to be complied with in reference to the locomotive, the rail, 1 car, freight and passenger, with due reference to cost of road-bed.

"This action of the South Carolina Railroad determined the gauge of the Southern roads, which continue that gauge to this time, but it is to be anticipated that the commercial advantages of uniformity of gauge will eventually narrow the gauge down to the coal-mine gauge of 4 ft. 8½ in.

"The other gauge referred to is that of the Erie Railroad. The gauge adopted for that road was 6 ft. Of that gauge were the 75 miles of the Eastern Division, used for many years.

"When the time came that it was believed that provision had been made for extending the road to Lake Erie, the question of gauge was again raised. Being at that time Consulting Engineer of the company, the question was referred to me.

"In the report submitted in reply, the conditions as to locomotives and cars were made the basis of the judgment, and again the 5 ft. gauge was the conclusion.

"The conclusion was concurred in as an engineering question, but the action of the company was to adhere to the broad gauge, and mainly for financial reasons."

This was about 1847. That Mr. Allen's judgment as to what was mechanically the best gauge was a good one, will hardly be disputed now, for if the whole railroad system were to be wiped out and the question of gauge were up anew, there would probably be a very general agreement on 5 ft., as on the whole preferable to 4 ft. 8½ in. That he only shared a universal error in not foreseeing how great a factor the interchange of cars was to be in the gauge question, is indicated in a curious way by a masterly report, bearing date March 25, 1856, or nearly 10 years later, by D. C. McCallum, that first example and worthy representative of the modern railroad manager, then General Superintendent of the New York & Erie Railroad.

Perhaps no single railroad report which has ever been published in this country is a greater milestone of railroad progress. In it Mr. McCallum gives, first, an account of his then unique organization, which was the first real attempt to systematize the administration of a great railroad system, and which is followed in substance to this day. He then gives what is unquestionably the first set of telegraph rules for train dispatching ever prepared or published, arguing in favor of the system with a care and detail which seems needless enough now, but which were then needed to defend something new and strange to every one. Forms agreeing with those now known as the "regardless" and "time" train orders are given, including the now universal "31" and "32" signals, and meeting orders are likewise provided for, all with substantially the same safeguards as to repeating messages back, duplicating and repeating orders, etc., which are now in use in the best systems, and which have been sometimes neglected since with disastrous results.

The physical characteristics and structures of the road are then given in much detail, followed by a full report of the still famous and useful tests of the hauling power of engines, made by the late Zerah Colburn, under Mr. McCallum's direction. The part of most curious interest for our immediate purpose comes next in order, a "comparison of gauges," which closes the report.

Enough is given in the report itself to show that the author of it was no "moss-back" nor fossil, but a man of extraordinary foresight, alive to all that was best in the railroading of his day, and largely himself the creator of it. He, if any one, might have been expected to foresee and provide for the coming changes in the way of interchange of cars, yet how does he look at it? After arguing with much ingenuity and detail the mechanical side of the question in favor of the 6 ft. gauge, in which he was more nearly right than many who took the other side, we have the following—in the light of later history, exceedingly funny—comments on the interchange question:

"It is also said that uniformity of gauges is necessary to the economical transportation of freight, and that a departure from the uniformity heretofore preserved would involve additional expenditure in loading and unloading freight.

"Plausible as this argument may at first sight appear, it is nevertheless in point of fact not true as to the economical effects claimed; as the cost of transferring freight from the cars of one road to those of another with which it connects is less than that of hauling the 'empty returned cars' back—rendered necessary in cases where the freight is sent east—the preponderance of trade being largely in that direction. It may be said, the 'dead weight' is the same whether the load was conveyed in cars belonging to this or some other company; but such is not the case, as the cars belonging to this road may be used in transporting local freights on their return, between intermediate stations, to as to be partially loaded at least; while in the other case, the cars must be promptly returned to their owners for use."

The guileless innocence of the primeval manager, who could not even imagine how we should change all that later, is betrayed in the last italicized clause, but he gets on to stronger ground at once by remarking that carson foreign roads were not even decently maintained, making transshipments often necessary.

"This has been the experience of this road, and our accounts show that it has cost this company nearly double the amount per mile run for the repairs of cars belonging to other lines that has been expended on their own. These objections have been found so serious in their character that it has been deemed necessary to almost entirely discontinue the system of interchange, although the lateral roads connecting with this were constructed of the same gauge with that particular object in view."

"An accurate account of the cost of loading and unloading freight has been kept at Dunkirk, from which it appears that the cost is 7 cents per ton, certainly a much less sum," etc.

This same song was sung by the narrow-gauge sirens in later days, and with it they sang the money out of many a man's pocket, who could have been lured to financial destruction by no broader-gauged song. In fact, the narrow gauge itself was (logically enough from his premises) anticipated by Mr. McCallum, for he says at the end of his report:

"While upon some roads a gauge of 6 ft. may be found more economical in the transaction of a heavy business, a gauge of 4 ft. 8½ in. may be much more suitable for the business of others; indeed, it is questionable whether, for a road doing a very light business, even the latter may not be found too wide for economical transportation."

But it is questionable if even a narrow-gauge advocate ever asserted the unimportance of uniform gauge quite so broadly as Mr. McCallum in his conclusion, for he says:

"I have no doubt that companies owning main lines have nothing to gain, but much to lose, by such an arrangement (interchange of cars), and I confidently believe that the experience of railroad managers generally will bear me out in the remark, that a road 500 miles long with a gauge which does not correspond with that of any (italics ours) independent line with which it connects enjoys, in this particular, an enviable position."

When these views were expressed (at the end of 1855) by the most enlightened railroad manager of his day (who, it is to be remembered, practiced what he preached as respects roads of his own gauge, and was not simply crying "sour grapes" as respects other roads), the Southern railroad system had already grown to some 2,800 miles on some 50 different lines, chiefly in the South Atlantic and Gulf states, out of some 13,000 miles in the country. It is therefore small matter of surprise that these several roads had followed in the main the example of the lines nearest to them in respect to gauge, without attempt to unify the gauge of the entire country; and while sectional feeling may have had some influence on this indifference, and in fixing the northerly limits of the gauge, the evenness of the figure alone probably had more, in the formative period of the Southern system. Had the North been so fortunate as to start in likewise with a 5 ft. gauge, it is questionable if such meaningless variations as the 4 ft. 10 in. gauge of Ohio and New Jersey—which latter was introduced from "sectional feeling," i. e., in the supposed interest of the state, so as to make important railroad points of the transshipping stations—would ever have occurred. As late as 1853 serious riots occurred when it was proposed to make the lines now constituting the Lake Shore road of a uniform gauge, and the Cincinnati Southern was made of the 5 foot gauge, in part from the same motive, to have all transshipments occur at Cincinnati, at a time when it was evident that the Southern gauge could endure but a few years longer.

To further illustrate how widely scattered was the railroad construction of "the first five years of the railroad era," and how little likelihood there was that the necessities of the future could have been foreseen, we have compiled from the historical records of the census of 1880 the following table, showing the number of miles and companies for each year to 1835 inclusive:

		States					U. S.
		New England.	Middle Va.	Md. & Va.	South.	Ohio & West.	
1830	No. lines.....	2	14	15	1	...	4
	Miles.....	14.8	15	1	...	...	39.8
1831	No. lines.....	4	1	...	...	...	5
	Miles.....	52.2	46.5	...	...	...	98.7
1832	No. lines.....	5	2	1	1	...	9
	Miles.....	83.8	42.7	52	12.8	...	191.3
1833	No. lines.....	7	1	1	1	...	11
	Miles.....	7	27.3	75	6.6	...	115.9
1834	No. lines.....	1	7	1	...	...	9
	Miles.....	31.6	170.3	12	...	...	213.9
1835	No. lines.....	3	3	1	...	...	7
	Miles.....	66.5	25	31	...	15.3	137.8
1830-35	No. lines.....	3	18	3	1	...	26
	Miles.....	98.1	353.1	174.5	137	34.7	797.4

The table is not precisely correct, for the Baltimore & Ohio had 15 miles completed in 1829, and other errors doubtless exist, but not enough to affect its substance. In the last four years of this era the South Carolina Railroad was the longest one in the country, and it was also, in those years, a very progressive and prominent line. It will be seen that, up to 1836, the average mileage constructed per company was only 30 miles.

The Baltimore & Ohio in New York and Philadelphia.

The Baltimore & Ohio is not taking any freight from New York now. Not being able to ship by rail, it might resort to steamers, and it probably would if it did not expect to open a rail line soon. The business it could secure by a steamer line would be, in many respects, different from that which it would seek for a rail line, and it might not pay to build up a business which in a short time would have to be abandoned in great part. The only obstacle to a connection with the Reading and the Central of New Jersey is the lack of a connection through the city of Philadelphia, where the Baltimore & Ohio is already taking through freight by its own road. To make the connection through or around Philadelphia may take months yet, but it is possible that a temporary connection by means of a car transfer in the Delaware at Philadelphia could be provided within a short time, and if so, it is certainly

best to wait for it. The company has been negotiating with the Central of New Jersey for a long time, and it is not an easy matter to manage, the Reading being in Receiver's hands, and it not being certain what will be the future of either it or the Central. But the difficulty and the persistence with which the negotiations are kept up indicate that something more than a temporary arrangement to fill the gap until the Baltimore gets its line to Staten Island is intended. It is hardly worth the while of the Central to trouble itself about the matter unless it can have the business for a considerable period; but what the Baltimore & Ohio can do without sacrificing its Staten Island interests is not easy to see.

Meanwhile there can hardly be said to have been any change in the situation except that it is more talked about, and, possibly, that the Baltimore & Ohio is paying larger commissions to scalpers for the sale of its tickets to Western points. It has made no change in its prices of them to the public, adhering to \$15 to Chicago, as it has since November. But there was very little said about it for months until now, when it is taken up as if it were a new thing. Brokers sell the tickets for \$13 and sometimes less, and it is possible that the company has been increasing its commissions for this purpose, expecting to affect more seriously the passenger business of the other lines. It doubtless is getting a great deal of the travel, but doubtless the other roads are doing well not to change their rates on that account.

When the Baltimore & Ohio does get its line to New York, it will want business at full rates. It is expected to claim a larger share than it has had heretofore, but it will hardly be likely to prefer such a claim until it has proved that with its new facilities it can command more at the rates other roads get. Therefore, it is not probable that it will resort to any open cutting of rates, as some seem to expect.

Whatever may happen at New York, it is likely to divert an important amount of business from the Pennsylvania at Philadelphia. The west-bound shipments thence are only about a fourth of those at New York, but the Pennsylvania carries about three-fourths of them, and the Baltimore & Ohio has had scarcely any; being able to carry to Pittsburgh as well as to other places further west, it will be able to take an important traffic which the Erie and New York Central (both of which have lines to Philadelphia, which together take about a fifth of its shipments) could hardly touch. It will also be a much shorter road thence to Cincinnati, Louisville, St. Louis, etc., than the Northern lines, and altogether more nearly equal to the Pennsylvania for Philadelphia business. It will probably be very disagreeable for the Pennsylvania to have it there, as it was for it to go into Pittsburgh years ago; but it can't be helped, and it only makes Philadelphia like other large cities. The Pennsylvania itself has long divided the Baltimore business with the Baltimore & Ohio, bringing there sometimes quite as much grain, etc., as the older road, and taking from it, we believe, more than a fourth of its through shipments.

The Late Ellis S. Chesbrough.

Although the fame of the great engineer who passed away on the 18th of the present month, full of years and honors, was won more in hydraulic and city engineering than in railroad work, yet the foundations of his fame were laid in railroad service, where all his earlier years were passed. Few men have had a more rounded and complete professional life, or have better illustrated the best traditions of the profession.

Mr. Chesbrough had just entered his seventy-fourth year at the time of his death, having been born near Baltimore, Md., July 6, 1813. He began his professional life at the early age of 15 as chairman on the first preliminary surveys for the Baltimore & Ohio Railroad, that great school for afterwards famous engineers. Two years later he was on the Allegheny Portage Railroad, and a year later on the "Paterson & Hudson," now the eastern end of the Erie. Although only 18 years old at that time he was in charge of party on surveys.

For the next six years, still working his way north, Mr. Chesbrough was on the Boston & Providence, Taunton & New Bedford, and finally the Lowell & Concord road, from which he went to the Louisville, Cincinnati & Charleston Railroad, as Senior Assistant Engineer, on which and various other Southern roads, he continued till 1842, when he was 29 years old. On this corps likewise, under his orders, were a number of men afterwards famous.

Railroad building had then practically ceased from the effects of the panic of 1837, and for the next year or two Mr. Chesbrough's only employment was some time spent in the shops of the Providence & Stonington Railroad to learn the use of tools, and a completely unsuccessful and soon abandoned attempt at farming; but in 1844, at the age of 31, he was again in the harness, locating and constructing the Stonington Branch of the Boston & Providence, the Ashburnham & Brattleboro, and in part the Pawtucket Branch of the Boston & Providence.

Here Mr. Chesbrough's railroad career was ended by an invitation in 1846, when he was only 33 years old, to become Chief Engineer of the Western Division of the Boston water-works, of which another eminent railroad man, John B. Jarvis, was Consulting Engineer. He acted in a consulting capacity for various railroads in later years, but never again was distinctively a railroad man.

His work on the water-works was very successful, and at the age of 48 (1851) he was appointed City Engineer of Boston, from which he resigned four years later to undertake the work which marked the beginning of his broader

fame, providing Chicago with sewers, subaqueous tunnels and water. He spent two or three years in investigating all that had been done in that line, both at home and abroad, and presented a masterly report which led to the adoption and successful carrying through of the then novel projects which have done so much for Chicago. The only error in Mr. Chesbrough's recommendations, if it can be called an error, was in not making sufficient allowance for the rapid growth of the city; but had he done so, to the extent of urging that full provision be made at once, it is questionable if the works could have been carried through, or that it would have been economically defensible to make the provisions so early, if they had been.

From this time on Mr. Chesbrough was engaged as consulting engineer on many works, of which the proposed Detroit River Tunnel is the only railroad work which we recall. He continued City Engineer of Chicago, however, until a few years ago (1881 we believe), when the gradual failure of his health, and some other circumstances which are understood to have been greatly to his credit, led to his resignation. His latest work was preparing a report, which was substantially followed, on the Quaker Bridge Dam, for the Croton water works.

Mr. Chesbrough was one of the earliest members and a Past President of the American Society of Civil Engineers, and was throughout his life a great student—as is almost self-evident from his record as an engineer—and had become likewise a man of wide and general culture. Modest, unassuming and indefatigable, he embodied as fully as is often possible those qualities and those virtues which go to the making of a great engineer—which he unquestionably was.

The Wheat Movement.

The movement of wheat to the seaboard, which first became large in the first week of August, increased further in the second week, the gain being at New York, whose receipts were larger than in any previous week of this year and much larger than in any week of last year, and were exceeded in only one week of 1884. The movement of winter wheat has not usually been to New York to so great an extent, and it is going there now to get the advantage of canal rates.

The wheat receipts at New York, Philadelphia and Baltimore and the aggregate at all Atlantic ports in each week since the new winter wheat began to move have been, in bushels:

	New York.	Phila.	Baltimore.	Atlantic ports.
June average.....	1,180,563	46,300	51,407	1,282,310
Week to—				
July 10.....	651,150	7,921	80,856	915,237
" 17.....	1,085,100	70,903	389,524	1,545,527
" 24.....	870,882	334,704	512,454	1,695,753
" 31.....	670,696	475,328	647,491	1,937,436
Aug. 7.....	1,477,730	619,751	753,293	2,323,104
" 14.....	1,854,658	510,968	743,075	3,527,736

The New York receipts were less in every July week than in any June week but one, which indicates that the movement of the new crop had not much to do with them, but Baltimore and Philadelphia received in a single week in July more than for months previous, and there was no corresponding increase at New York until this month. But the increase at New York is not attended with a decrease at Philadelphia and Baltimore, whose receipts, however, have been exceeded in previous years much more frequently than the largest of these New York receipts have been. Thus, while the largest Baltimore receipts this year were 753,300 bushels, in 1884 it received for three successive weeks ending Aug. 9, 1,063,280, 1,411,448 and 811,441 bushels—3,225,000 bushels in three weeks, against 3,137,000 in six weeks this year. The Philadelphia receipts were then much less than this year, however—1,687,800 for six weeks corresponding to those in which it has received 2,019,300 bushels this year. In 1883 there were three weeks in which Baltimore received more than a million bushels, and in 1882 five weeks, and in these five it received 6,798,450 bushels, but then the total Atlantic wheat receipts were much larger than the largest this year. The indications are, however, that the wheat has been withheld from the railroads more than usual when the whole movement has been as large. The effort to reach the lake and canal route has resulted in the extraordinarily large receipts at Toledo and Detroit, which have come very largely from a territory which for several years past has shipped chiefly directly through by rail. One of the effects has been to advance lake and especially canal rates, the latter being now 6 cents per bushel, which would have been high before the tolls were abolished, and is twice as much as the rates have often been in the last two years, and substantially equal to the railroad rate. If the movement from the Northwest continues, large shipments will soon be forced to go by rail by the sheer inability of the canal boats to carry it all; and this will be likely to extend to some extent to the railroads west of Buffalo and Erie, which compete with the lake vessels, which get about half as much for carrying from Chicago to Buffalo as the canal boats get for carrying from Buffalo to New York.

The receipts of the Northwestern markets were nearly the same in the second week as in the first week of August, nearly half of them being at Toledo and Detroit. Receipts are declining at St. Louis, where they first became large, having been there, in bushels:

Week ending				
July 10.	July 17.	July 24.	July 31.	Aug. 7.
734,216	1,263,489	1,371,748	1,047,957	765,807
				597,811

while for the entire five weeks to July 3 they were only 385,908 bushels. This is the usual course at St. Louis. It has its largest receipts shortly after the new crop begins to move. The aggregate Northwestern wheat receipts are still

NEW PUBLICATIONS.

Proceedings of the Eleventh Annual Meeting of the Car Accountants' Association. Issued by the Association; H. H. Lyon, Secretary, Bloomington, Ill.

The Car Accountants' Association, during the 11 years of its existence, has made less noise perhaps than some other railroad associations, but has done a great deal of solid and valuable work. The report of its last annual convention which was held in Buffalo in June, contains several reports of considerable value, some of which we have heretofore republished. The discussions, as reported in the proceedings, are generally very much to the point, and the Association appears to have wasted very little time at its annual meetings.

A very convenient appendix to the report contains the resolutions passed at the different conventions of the Association, arranged under appropriate headings in chronological order. The subjects of these resolutions includes Demurrage, Usage of Foreign Cars, Individual Car Reports, Junction Exchange Reports, Mileage Reports, Tracing Cars and a number of others, and a reference to this appendix enables any one interested to ascertain just what the action of the Association has been on the point concerning which he desires information.

One excellent point should be noted, and that is the promptness with which the report has been issued. The convention was held June 15 last, and the report is received only a little over two months after the convention. If some of the other railroad associations would imitate this promptness, instead of taking six or eight months to publish their proceedings, it would be a great benefit to all concerned.

The *Popular Science Monthly* for September contains the second part of Mr. P. H. Dudley's interesting article on "Woods and Their Destructive Fungi." Mr. Dudley concludes by a strong statement in favor of the preservation of ties and other timber by some of the chemical processes now in use.

The *Railroader*, a monthly journal intended specially for railroad employes, which has been published in Toledo, O., for several years by Col. W. R. Leflet, has been sold by him to Messrs. George E. Lemon, John McElroy and Byron Andrews, who will continue the publication of the paper, but have transferred its headquarters to Washington, with a branch office in New York. Mr. McElroy was formerly editor of the *Railroader*, having founded it and conducted it for two or three years before transferring it to the late proprietor.

TRADE CATALOGUES.

Engineers' Pocket Reference Book, by W. S. Howard, contains much information that will be useful to those using the Crosby indicator.

The *Wagner Car-Door Company*, of Indianapolis, issues a pamphlet setting forth the merits of its device which was illustrated in these columns some time ago.

The *Worthington Steam Pumping Engine*, by Henry R. Worthington, is really a tolerably complete treatise on pumping engines, and was originally designed for circulation at the Centennial. The book is fully illustrated with elevations and sections of different classes of the Worthington pump, indicator diagrams, etc., and will be valuable to all those who use or contemplate using large pumps.

The *Pratt & Whitney Company*, of Hartford, Conn., has issued a most useful illustrated catalogue of its machine tools and specialties. This catalogue is of very convenient size for the pocket, and is very carefully written and well illustrated, while the machines are more fully described than is usual in far larger publications of this class. The descriptions and illustrations cover a great variety of machine tools and various useful accessories such as Thurston's testing machines, belt shifters, iron molders' flasks, measuring machines, limit gauges, chucks, wrenches, dogs, knurling tools, dividers, etc., etc.

THE SCRAP HEAP.

The End of a Famous Car.

There is on the Marysville & Blue Valley Branch of the Union Pacific road an old dilapidated car. Its exterior is in sad need of the painter's brush. Its interior is rough and dirty. It is fitted up with rough bunks, and is used to transport section hands from point to point. A close inspection, however, of its present condition will reveal features which would puzzle one who had seen it years ago. Here and there will be discovered a trace of gilding. The woodwork, if you scratch off the soot and dirt, will be found to be of solid mahogany and black walnut.

In short, it is a relic of faded gentility. Although it now takes in lodgers, like the traditional landlady, it has seen better days. This poor old shabby-genteel common-carrier was once considered the finest car ever built in the United States. Mechanics from all parts of the country who were master workmen were secured to work in its construction. It once shone resplendent in red velvet and gilding. It is, in short, the famous car "Abraham Lincoln."

This car was built in Alexandria, Va., in 1864. It was intended for an officers' car, to run on the military railroads; that is, the roads which ran into the section of the country where the heavy fighting was going on.

It was at the time considered *par excellence*. It wore all the trappings belonging to wealth and rank. It shone resplendent in scarlet and gold. Soft turkey carpets covered the floor, velvet couches and chairs adorned its central reception-room. At one end were state-rooms for sleeping purposes. At the other were a dining-room and kitchen, over which presided a *chef* of supreme attainments in its profession.

Statesmen, famous over the civilized world, reclined on its upholstered couches and dined at its tables. The original cost of this car was something over \$30,000. When Lincoln was assassinated, to this car, his namesake, was entailed the duty of conveying his remains to Springfield.

From the performance of this duty the car attained a national reputation, and speculators began at once to make bids

for it, with a view to putting it on exhibition in dime museums. To prevent this the car was bought up by Mr. Lincoln's old law partner, Mr. Ward H. Lamon, now a resident of Denver. He purchased it at a government sale at Alexandria in 1865. Shortly after Mr. Lamon had bought it Secretary Stanton wrote him a letter begging that the car be kept out of the hands of exhibitors. This Mr. Lamon assured him was his intention.

In 1866 the car was sold by Mr. Lamon to Mr. Henry S. McComb, of Delaware, one of the directors of the Union Pacific, for that road. It then was used to bring out from New York Mr. T. C. Durant and a party who made a trip to what was then the western terminus of the road. At that time the different tribes of Indians along the line were throwing obstructions in the way of the further progress of the road, and in this car the officials met representatives of the various tribes to discuss the matter. On the return of the car to Omaha it was held there, and was used as an officers' car up to '69. It was then, on orders from Sydney Dillon, changed to an emigrant car, and remained in that service up to 1874. It was then sold to the Colorado Central for \$3,000, and marked "Colorado Central, No. 4." It was used by the road as a chief engineer's car.

The old car has been knocked around from place to place, at every move descending lower and lower from its exalted height, until now, in its battered old age, it transfers the section hands from point to point over the road.—*Denver (Col.) Tribune-Republican.*

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Housatonic, special meeting, in Bridgeport, Conn., Sept. 15, to vote on the lease of the Danbury & Norwalk road.

Louisville & Nashville, annual meeting, at the office in Louisville, Ky., Oct. 6.

Nashville, Chattanooga & St. Louis, annual meeting, in Nashville, Tenn., Sept. 15. Transfer books closed June 18.

Northern Pacific, annual meeting, at the office in New York, Sept. 16. Transfer books closed Aug. 2.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Delaware & Hudson Canal Co., 1½ per cent. quarterly, payable Sept. 15, to stockholders of record on Aug. 28.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *Central Traffic Association, Passenger Committee*, will hold its next meeting in Chicago, on Tuesday, Sept. 7.

The *Master Car & Locomotive Painters' Association* will hold its annual convention in Chicago, beginning on Wednesday, Sept. 8.

The *Brake Committee of the Master Car-Builders' Association* will hold a meeting at No. 73 Broadway, New York, at 10 a. m., on Wednesday, Sept. 15.

The *Brotherhood of Locomotive Firemen* will hold its annual convention in Minneapolis, Minn., beginning on Wednesday, Sept. 15.

The *National Association of General Passenger & Ticket Agents* will hold its next meeting at the Hotel Brunswick in New York on Tuesday, Sept. 21.

The *General Time Convention* will hold its fall meeting in New York, on Wednesday, Oct. 18.

The *Western Society of Engineers* holds regular meetings at its hall, No. 15 Washington street, Chicago, at 7:30 p. m. on the first Tuesday of each month.

Foreclosure Sales.

The *Missouri, Iowa & Nebraska* road was sold under foreclosure in Keokuk, Ia., Aug. 19, and bought for \$600,000 by T. Dewitt Cuyler, representing the bondholders. The road extends from Keokuk, Ia., to Hunston, 131 miles, and was formerly part of the Wabash system.

The *Havana, Rantoul & Eastern* road will be sold under foreclosure of the first mortgage for \$300,000 on Oct. 27 next. The road extends from West Lebanon, Ind., to Leroy, Ill., 76 miles. It was formerly part of the Wabash system.

The *Cincinnati & Eastern* road will be sold in Cincinnati, O., Sept. 1, by Benjamin F. Coates, Special Master under the decree of foreclosure granted by the Court of Common Pleas. The sale will include the entire line from Cincinnati to Portsmouth, 103 miles, with the branch to New Richmond, 14 miles, with all the equipments and other property. The minimum price fixed by the Court is \$670,000 for the main line and \$30,000 for the branch, and the purchaser will be required to pay in cash at the time of sale \$25,000 on the main line and \$2,000 on the branch. The purchaser will further be required to pay an amount in cash equal to such claims as the Court may decide to be prior to the first mortgage, the balance to be payable in cash or in receiver's certificates, bonds or other claims against the company, as the Court may approve.

The *St. Louis, Salem & Little Rock* road will be sold in St. Louis, Sept. 27, under a decree of foreclosure granted by the St. Louis Circuit Court. The purchaser will be required to pay \$10,000 in cash at the time of sale, any balance to be payable in cash or bonds as approved by the Court. The road, which was built to reach an iron-mining district, extends from Cuba, Mo., to Salem, 41½ miles, with 30½ miles of branches. The funded debt consists of \$1,000,000 first-mortgage bonds.

ELECTIONS AND APPOINTMENTS.

Alabama Great Southern.—Mr. L. F. Henington is appointed Trainmaster in place of Mr. A. Griggs, recently promoted to be Superintendent. Mr. Newton Scale succeeds Mr. Henington as Chief Train Dispatcher.

Baltimore & Ohio.—The following order has been issued by Mr. David Lee, General Superintendent of the main stem and branches: "Hereafter the line between Baltimore and Keyser, W. Va., including all branches, will be known as the Eastern Division of the main stem, and the line west of Keyser, including Keyser yard, will be known as the Western Division."

"The following appointments have been made, to take effect Sept. 1, 1886:

"Mr. Thomas Fitzgerald, Division Superintendent in charge of the Eastern Division.

"Mr. Charles Dunlap, Division Superintendent in charge of the Western Division."

The following order is dated Aug. 14: "The completed portion of the Schuylkill River East Side Railroad will be opened for traffic on Monday, Aug. 16. The authority of the General Manager of the Baltimore & Ohio Railroad, and of the Superintendent of Philadelphia Division has been extended to cover the same. They will be obeyed and respected accordingly."

Burlington, LaFayette & Western.—This company held its annual meeting in LaFayette, Ind., last week, and elected

the following directors: Carl C. Winter, Danville, Ill.; Thomas S. Crapp, David Hill, Ezra Spangler, LaFayette, Ind.; George W. Torrence, Philadelphia.

Canadian Pacific.—It is said that Mr. T. A. Mackinnon, now General Manager of the Southeastern of Canada, will succeed Mr. John M. Egan as General Superintendent of the Western Division.

Chicago & Indiana Coal.—Mr. J. H. Kingwill has been appointed Auditor of this company in place of Mr. G. W. Dunlap, resigned, taking effect Aug. 21. The office of the Auditor has been removed from Attica to Chicago. All communications for the Auditor should be addressed, Room 125 Adams Express Building, Chicago. Mr. Kingwill was recently Accountant of the Manitoba & Northwestern Company.

Eastern Maine.—This company has elected Eugene Hale, President; L. A. Emery, Clerk; G. W. Kimball, Treasurer; The road is leased to the Maine Central.

East Tennessee, Virginia & Georgia.—Mr. L. J. Ellis is appointed Assistant General Passenger Agent, with office in Atlanta, Ga., and will have charge of the passenger business of the Georgia Division. He has been for some time General Western Agent of the road. Mr. J. J. Griffin, heretofore Assistant General Freight and Passenger Agent, will hereafter be Assistant General Freight Agent only, with office in Atlanta, continuing in charge of the freight business of the Georgia Division.

Escambia.—The officers of this new company are: President, Mr. H. Sullivan; Secretary and Treasurer, T. E. Jordan. Office in Pensacola, Florida.

Green Bay & Great Northwestern.—The leading corporators of this new company are: Charles V. Roman, T. B. Sale, Green Bay, Wis.; A. T. Smith, Appleton, Wisconsin.

Hudson Suspension Bridge & New England Railroad Co.—Gen. W. C. Hurd, of New York, is President of this company; Sewell, Pierce & Sheldon are attorneys.

Little Rock, Fort Smith & Texas.—The directors of this new company are: B. Baer, James Brizzolara, Powell Clayton, W. H. Clayton, Wm. Davison, A. H. Foote, Logan H. Roots, P. K. Roots. Office at Little Rock, Arkansas.

Liverpool Coal.—The first board of directors are Wm. H. Emerson, John Skinner, Wm. T. Rucker, D. W. Roosa and Taylor W. Emerson, all of Astoria, Illinois.

Marin & Napa.—The directors of this new company are: J. Merwyn Donahue, R. H. Lloyd, Peter J. McGlynn, Mary E. Von Schroder, Henry C. Whiting. Office in San Francisco.

Master Car-Builders' Association.—The office of the Secretary, Mr. M. N. Forney, has been removed from No. 73 Broadway to No. 23 Murray street, New York city.

Memphis, Arkansas & Kansas.—The directors of this new company are: James Fussell, L. Rollwagen, Forest City, Ark.; Calvin S. Brice, Charles Lemison, Lima, O.; John G. Moore, Samuel Thomas, New York.

Minneapolis & St. Louis.—Mr. L. F. Kimball is appointed General Freight Agent in place of Mr. J. A. Hanley, who has gone to the Minnesota & Northwestern road. Mr. Kimball was recently General Agent at St. Paul for the Chicago, Rock Island & Pacific road.

Montana Union.—Mr. Charles Blackwell has been appointed Acting General Manager, with office at Butte, Mont. The appointment is made jointly by the Union Pacific and the Northern Pacific companies.

Mr. Blackwell has issued the following circular: "Mr. E. E. Calvin has been appointed Acting Trainmaster and Chief Dispatcher, with office at Silver Bow. All train orders will bear his signature and his instructions will be obeyed accordingly. Agents and conductors will make their car reports to the Trainmaster's office, and conductors will make requisition on that office for stationary supplies. Annual passes issued by the Union Pacific and Northern Pacific railways will be honored on the Montana Union Railway until further notice. The rules and regulations heretofore governing the employes of the Union Pacific Railway, will, until further orders, be in force on the Montana Union Railway. Due notice will be given of any changes that may be found necessary. When not in use, the junction switch at Silver Bow will be set for the main line of the Montana Union Railway."

"Mr. John W. Elze has been appointed Acting Master Mechanic, with office at Butte. All persons interested will govern themselves accordingly."

The recently published statement that Mr. Dawson had been appointed Superintendent is premature. Mr. Dawson is now acting as Agent at Butte.

Mobile & West Alabama.—Mr. W. M. Patton is Chief Engineer, and has his office at the present at the Battle House in Mobile, Alabama.

Pullman's Palace Car Co.—Mr. Thomas W. Bowers has been appointed Superintendent of the new Eastern repair shops at Wilmington, Del. Mr. Bowers was formerly of the firm of Bowers, Dure & Co. and lately Manager of the Dure Car Manufacturing Co., which succeeds the old firm.

St. Paul, Minneapolis & Manitoba.—At the annual meeting in St. Paul, Minn., Aug. 19, the following directors were chosen: J. J. Hill, S. D. Minot, St. Paul, Minn.; D. Willis James, John S. Kennedy, Samuel Thorne, New York; Donald A. Smith, George Stephen, Montreal. The new director is Mr. Minot, who replaces Marshall Field, of Chicago. The board re-elected J. J. Hill President; John S. Kennedy, Vice-President; S. D. Minot, Second Vice-President; Edward Sawyer, Secretary and Treasurer; Allen Marvel, General Manager; N. D. Miller, Chief Engineer; A. H. Bode, Comptroller; S. S. Breed, Auditor; Edward T. Nichols, Jr., Assistant Secretary and Transfer Agent.

Sea Beach & Sheephead Bay.—The incorporators of this company are: A. H. Man, B. B. Lawrence, C. C. Frotheroe, H. H. Balch, J. T. Nelson, H. S. Iselin, H. J. Cullen, G. W. Wingate, Cornelius Furgueson, Jr., S. Stryker Williamson and G. B. Abbott.

Seattle, Lake Shore & Eastern.—At a meeting held in Seattle, Wash. Ter., recently, the following changes were made: D. H. Gilman resigned as trustee and manager, and L. C. Gilman was elected as trustee to fill the vacancy. Thomas Burke resigned as trustee, and Dr. H. B. Bagley was elected to fill the vacancy. C. H. Kittinger resigned as Secretary, and Col. George G. Lyon was elected to fill the vacancy.

Silver Springs, Ocala & Gulf.—Maj. N. R. Gruelle, Chief Engineer, has been appointed Superintendent also, with office at Ocala. Mr. Edgar C. Bird is appointed Assistant Treasurer, with office at Ocala.

Wichita & Winfield.—The directors of this new company are: James H. Catle, La Fayette, Ind.; J. D. Hewett, Frank Williams, Wichita, Kan.; Thomas Donahue, Belle Plaine, Kan.; Geo. B. Caldwell, Oxford, Kan.; G. S. Mansur, C. J. Forsythe, P. H. Albright, H. A. Hoffman, Winfield, Kan.

PERSONAL.

—Mr. T. W. Frederick, recently on the West Shore road, has accepted a position with the Westinghouse Air Brake Co., and will represent that company in Brazil and other countries of South America.

—Mr. W. H. Cogswell has resigned his position as Contracting Freight Agent in St. Louis for the Hoosac Tunnel line, to accept a position in the freight department of the Gulf, Colorado & Santa Fe.

—Mr. Ellis S. Chesbrough, an eminent engineer and Past President of the American Society of Civil Engineers, died at his residence in Chicago, Aug. 18, aged 74 years. A more extended notice of his life will be found in another column.

—Col. Peter C. Doyle, long General Western Passenger Agent of the Lehigh Valley Railroad, has been chosen Brigadier General of the Fourth Brigade, New York State National Guard. The headquarters of the brigade are in Buffalo, where Col. Doyle has long resided.

—Mr. Benjamin T. Biggs, who has been nominated as a candidate for the office of Governor of Delaware by the Democratic Convention, is President of the Queen Anne & Kent Railroad Co. He owns a large estate on the line of the road, and was one of the principal stockholders when the road was built.

—Mr. Frank M. Baker, General Superintendent of the Addison & Northern Pennsylvania road, presided over the recent convention of the New York State Firemen's Association. Mr. Baker is President of the Association, and has been one of its most active and enthusiastic members for a number of years past.

—Col. John B. Breathitt has been nominated by the Democratic convention as a candidate for the office of Railroad Commissioner of Missouri. Col. Breathitt is a lawyer of good standing, but without railroad experience. The only public office he has heretofore held is that of prosecuting attorney of his county.

—Mr. Charles Blackwell, who was formerly Superintendent of Motive Power of the Norfolk & Western road, and who for some time past has been connected with the Union Pacific, is now Acting General Manager of the Montana Union Railroad, which is a line operated jointly by the Union Pacific and the Northern Pacific companies.

—Mr. Charles W. Mead has accepted the position of General Manager of the Guatemala Central road, and will have charge of the construction of that line. He recently sailed from San Francisco to take charge of the work. Mr. Mead was for some time General Superintendent of the Hannibal & St. Joseph road, and subsequently served on the Missouri Pacific, the Union Pacific, and as General Manager of the Northern Pacific. He has been in California for two years past.

—Mark Benedict, recently appointed Division Master Mechanic of the Chicago, Burlington & Northern Railroad, with headquarters at Savanna, Ill., is a son of E. U. Benedict, General Foreman in the car department of the Chicago, Burlington & Quincy at Aurora, learned the machinists' trade on the Michigan Central, and was for eight years a locomotive engineer on the Chicago, Burlington & Quincy, and has run an engine on the new road from the time the first track was laid.

—Mr. Robert Barry, Superintendent of the Central Division of the Pullman sleeping car lines, has resigned his position, it is stated, for the purpose of accepting the office of General Superintendent of the New York Central Sleeping Car Co.'s lines. Mr. Barry has been connected with the Pullman Co. since 1871, and after serving for 10 years in various capacities was made Assistant to the General Superintendent in 1881. A few months ago he was appointed Superintendent of the Central Division.

—On Aug. 23, Charles H. Wyckoff, the only son and child of P. H. Wyckoff, the well-known General Freight Agent of the Central Railroad of New Jersey, died at Middle Valley, N. J. Everybody connected with the road knew him as one whose ability promised a successful railroad career, had his health not succumbed to the inroads of consumption. Though only a little past 30, he had held positions of confidence and trust with the New Jersey Central and the New York & Long Branch roads. He was Treasurer of the Exempt Fire Department of Elizabeth, N. J., for some years, and was very popular among his neighbors and associates, as well as on the road.

TRAFFIC AND EARNINGS.

Rates to Colorado Points.

A conference was held in Salt Lake, Utah, Aug. 20, for the purpose of fixing rates to Colorado points from California. The meeting was held in consequence of complaints made, to the effect that canned goods, sugar and other articles had been taken to Colorado points at lower rates from California than from Chicago. The conference was friendly and the matter was adjusted without difficulty.

Rates on Wheat in Kansas.

The Kansas Railroad Commissioners have ordered a general reduction in rates on wheat from local stations to Missouri River points. With some variations to suit local circumstances the general rates fixed are as follows per 100 lbs.

Miles.	Cents.	Miles.	Cents.	Miles.	Cents.
25	7 1/2	50	10 1/2	75	13 1/2
100	14 1/2	150	18 1/2	200	21 1/2

The Commissioners give a long opinion in support of their decision, the conclusion of which is as follows: "It is quite impracticable to adjust the price of such a commodity as wheat to cost of production and profit; it can only be regulated by the relative supply and demand. Hence, its price diminishes in proportion to its remoteness from the place where the price is fixed upon the surplus of consumption, and such remoteness is more forcibly represented by the aggregate cost of getting the wheat there than by the mere distance from that place to the fields where it is harvested. Measured by this rule, the western Kansas wheat fields are among the most distant in the world from the markets that create prices which, within narrow limits, rule the wheat product of the globe.

"It is urged as a further objection to the reduction of rates that such reduction would have a tendency to accelerate the movement of grain to commercial centres and lower price. Ordinarily, such a result might be anticipated, but not when the price was already too low to cover cost of production nor unless the reduction was very considerable.

"Under existing circumstances, we regard it as inevitable that the cultivation of wheat must decline in this state, notwithstanding the land is well adapted to the growth of that cereal, and it is equally certain that there is nothing to take the place of wheat upon a large area of Kansas, available to the farmer of small means cultivating small farms, or that could furnish to railroads anything near the same bulk of valuable freight.

"To avert such a result, which must be considered alike

disastrous to the farming interests and to railroads, we deem it necessary, after a careful survey of the situation, that some reasonable concession should be made in the rate on wheat.

"We have prepared and submit herewith a schedule of rates which we deem fair and reasonable, and which, we think, should be adopted on the lines of road in the state.

"We have also suggested and recommended a few changes in the corn tariff, chiefly, however, with a view of rendering the scale more even and equal, and these we also recommend be adopted."

Classification of Dry Goods.

The trunk lines, through Commissioner Fink, have offered in response to the request of the New York dry goods merchants to make a special rate of 50 cents per 100 lbs. from New York to Chicago on cotton goods. This rate, it is understood, is experimental, and the merchants' committee has accepted it in that sense, reserving the right, after a six months' trial, to ask for a formal rearrangement of the classification.

Central Traffic Association.

Assistant Commissioner George H. Daniels issues the following special circular, dated Chicago, Aug. 20: "The next meeting of the Central Traffic Association, Passenger Committee, will be held at the Association rooms in Chicago, Tuesday morning, Sept. 7, instead of Wednesday, Aug. 25, as agreed upon at the meeting held at Niagara Falls."

Mr. Daniels has also issued the following: "At meeting of managing officers of lines composing the Central Traffic Association, held at New York Aug. 19, the action taken at the Niagara Falls meeting authorizing a rate of \$5, Chicago to Boston and return, was rescinded, and it was decided that no rate less than \$18 from Chicago, or any other point in the territory of the Central Traffic Association, to Boston and return, should be made for the Odd Fellows, and the \$13 rate shall be made only on one day, viz.: Sept. 18."

At the meeting of the Central Traffic Association in New York last week the revised and amended passenger contract was approved and signed. A committee was appointed to consider the advisability of enlarging the scope and powers of the Association, and this committee was to meet in Saratoga this week.

New England Traffic Notes.

The Boston Railroad Clearing House reports loaded cars coming into New England at all points during the month of July, 1886, as compared with July, 1885, as follows: July, 1886, 42,229; July, 1885, 36,837; increase, 5,392 cars, or 14.6 per cent.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Seven months to July 31:	1886.	1885.	Inc. or Dec.	P. c.
Balt. & Potomac	\$742,635	\$759,348	D.	2.6
Net earnings	283,509	289,570	D.	6.0
Cleve. & Canton	193,422	166,891	I.	26.5
Net earnings	106,173	339,956	I.	66.2
Georgia Pacific	406,173	1,192,885	I.	103.1
Net earnings	509,879	480,200	I.	26.7
N. Y. L. E. & W.	10,119,066	8,492,333	I.	17.7
Net earnings	3,173,918	2,316,108	I.	36.7
N. Y. P. & Ohio	3,415,349	2,672,846	I.	27.5
Net earnings	1,128,282	579,807	I.	54.8
N. Y. Sus. & W.	601,029	596,812	I.	4.8
Northern Central	3,031,861	3,009,494	I.	22.3
Net earnings	1,021,137	1,154,238	D.	13.1
Pennsylvania	27,006,544	25,004,701	I.	2.0
Net earnings	9,250,344	7,679,314	I.	20.4
South Carolina	595,798	594,131	I.	1.6

Six months to June 30:	1886.	1885.	Inc. or Dec.	P. c.
E. Ten. Va. & G.	\$1,891,367	\$1,892,025	D.	.6
Net earnings	515,093	433,290	I.	18.9
Maine Central	1,363,258	1,294,707	I.	6.9
Net earnings	483,100	449,295	I.	7.5
Oreg. Short Line	446,327	446,327	I.	0.0
Net earnings	291,458	193,243	I.	50.8
Rome, Wat. & O.	1,053,186	749,005	I.	40.5

Atlantic System	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	4,022,258	4,027,988	D.	5.7
Net earnings	845,713	1,550,205	D.	45.4
Pacific System	10,736,108	10,014,070	I.	7.2
Net earnings	5,315,341	5,046,461	I.	5.3

Five months to May 31:	1886.	1885.	Inc. or Dec.	P. c.
Central Pacific	\$5,850,173	\$5,348,289	I.	9.4
Net earnings	1,592,034	2,751,581	I.	40.5

Month of May:	1886.	1885.	Inc. or Dec.	P. c.
Central Pacific	\$1,376,648	\$1,280,511	I.	7.5
Net earnings	801,347	757,728	I.	5.7

Month of June:	1886.	1885.	Inc. or Dec.	P. c.
E. Ten. Va. & G.	\$320,308	\$274,476	I.	16.8
Net earnings	138,410	66,718	I.	107.5

Maine Central	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	265,101	247,865	I.	7.0

Oreg. Short Line	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	115,267	96,522	I.	19.3

Rome, Wat. & O.	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	173,130	162,720	I.	6.4

So. Pacific Co.	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	45,825	44,323	I.	3.4

Atlantic System	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	232,101	140,810	I.	65.1

Atlantic System	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	59,618	48,347	I.	23.1

Atlantic System	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	605,760	628,037	D.	3.5

Atlantic System	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	63,902	209,786	D.	69.5

Pacific System	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	1,985,909	1,835,151	I.	8.2

Pacific System	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	1,024,540	1,070,321	D.	4.3

Month of July:	1886.	1885.	Inc. or Dec.	P. c.
Balt. & Potomac	\$112,721	\$103,806	I.	8.6

Net earnings	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	48,777	38,390	I.	27.3

Cleve. & Canton	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	32,680	24,024	I.	36.1

Georgia Pacific	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	10,190	5,481	I.	85.6

Nash. C. & St. L.	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	57,605	42,452	I.	36.2

N. Y. L. E. & W.	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	215,256	165,667	I.	29.4

N. Y. P. & Ohio	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	92,680	68,121	I.	36.1

N. Y. Sus. & W.	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	1,592,034	1,308,380	I.	22.1

Northern Central	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	573,023	429,401	I.	34.4

Pennsylvania	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	572,311	372,656	I.	54.0

South Carolina	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	216,981	60,079	I.	261.5

Second week in August:	1886.	1885.	Inc. or Dec.	P. c.
Chi. & Atlantic	\$247,800	\$380,000	I.	27.4

Chi. & Atlantic	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	102,100	98,000	I.	4.2

Cairo, V. & C.	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	13,624	9,002	I.	51.8

Illinois Central	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	216,900	200,086	I.	8.1

Iowa lines	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	31,400	25,915	I.	17.3

Third week in August:	1886.	1885.	Inc. or Dec.	P. c.
Chi. & Atlantic	\$30,957	\$22,352	I.	38.5

Chi. & Atlantic	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	445,000	397,437	I.	11.9

Ill. S. & W.	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	60,468	31,935	I.	89.1

Northern Pac.	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	245,989	227,073	I.	8.3

St. Louis & San F.	1886.	1885.	Inc. or Dec.	P. c.
Net earnings	104,100	82,400	I.	25.1

Coal.

Coal tonnages for the week ending Aug. 14 are reported as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Anthracite	892,480	722,984	D.	4.2
East-tern bituminous	263,120	238,898	I.	10.1
Coke	70,130	51,114	I.	37.3

The anthracite companies have agreed upon 2,750,000 tons as the output for September. This is about 500,000 tons less than the production for September of last year, and the reduction is evidently meant to lower the stocks on hand and to bring down the production as closely as possible to the

amount which, it is believed, the market will take up readily.

Cumberland coal shipments for the week ending Aug. 21 were 71,372 tons. Total to Aug. 21 this year, 1,330,120; last year, 1,711,932; decrease, 381,812 tons, or 22.3 per cent.

The coal tonnage of the Pennsylvania Railroad for the week ending Aug. 21 was:

Line of road	Coal.	Coke.	Total.	1885.
From other lines	131,845	67,450	199,294	179,656
Total	211,738	68,082	279,820	268,073

Year to Aug. 21..... 7,282,016 2,144,349 9,426,365 8,849,282

Increase for the week, 11,747 tons, or 4.4 per cent.; increase for the year, 937,083 tons, or 11.1 per cent.

Petroleum.

The production, shipments, etc., of the Pennsylvania and New York oil wells for July are given by *Stowell's Petroleum Reporter* as follows, in barrels of 42 gallons:

	1886.	1885.	Inc. or Dec.	P. c.
Production	2,660,074	1,775,804	I.	49.8
Shipments	2,418,961	1,961,152	I.	23.3
Stock, July 31	34,238,490	35,686,909	D.	3.5
Producing wells	25,030	22,524	I.	11.1

Of the total production the Allegheny District in New York furnished 6.1 per cent.; the Bradford District in Pennsylvania, 25.9; the Warren District, 17.5; the Lower District, 38.9; the Washington District, 11.6 per cent.

Stock was increased by 241,113 barrels, that being the excess of production over shipments for the month.

The destination of shipments for the month was as follows:

	Crude.	Refined.	Total.	P. c.
New York	535,512	113,803	649,315	28.1
Philadelphia	741,002	176,246	917,248	37.9
Baltimore	108,009	12,807	120,816	5.0
Boston	23,870	76,500	100,370	4.1
Cleveland	220,664	.....	220,664	9.2
Pittsburgh	121,991	.....	121,991	5.0
Local points	207,473	51,084	258,557	10.7

Total..... 1,988,521 430,440 2,418,961 100.0

In this table the refined oil is that treated at the Creek refineries; in the oil region it is reduced to its equivalent in crude, so that the total represents the amount of crude oil shipped to each point, whether in crude or in refined form.

Cotton.

Pennsylvania Railroad officials that these rates would not have been prohibitory. The trunk-line rates from New York to Buffalo, Pittsburgh, Wheeling, Parkersburg, etc., and intermediate points are: First class, 43 cents; second class, 35 cents; third class, 26 cents; fourth class, 20 cents; fifth class, 15 cents. The local rates sought to be imposed by the Pennsylvania Railroad from New York to Baltimore are: First class, 50 cents; second class, 40 cents; third class, 25 cents; fourth class, 20 cents.

Thus on all business for points west of Baltimore, and to Parkersburg and Wheeling inclusive, the Baltimore & Ohio would have performed the service of transportation for nothing or less than nothing. On Chicago business about two-thirds of the entire rate would have been absorbed by the Pennsylvania Railroad for 200 miles haul to Baltimore, leaving one-third for the 800 miles from Baltimore west. The claim of the Pennsylvania Railroad Co. that the Baltimore & Ohio was not put off its lines may, therefore, be technically correct, but practically the notice could have but one effect.

The Baltimore & Ohio is a party to the presidents' agreement still, but not to the New York pool. The agreement is a general one between all of the trunk lines to act together for mutual protection, and for the maintenance of uniform and equitable rates. It provides also in a general way for the formation of pools at various points where they are deemed necessary. A pool is merely a plan for an equitable division of traffic between the several lines in interest. The New York pool is only one of several. The action of the Pennsylvania in arbitrarily excluding the B. & O. from any participation in the New York traffic excludes this company from that pool and its benefits. Under the rulings of the commissioner and the action of the executive committee, the B. & O. accepts this condition of affairs and will abide by it, although the driving of one member out by the arbitrary action of another is certainly in conflict with the spirit, and, we believe, the letter of the president's agreement. Ordinarily such a measure would be sufficient to break any pool, but the B. & O. prefers to adhere to its obligations, and seeks to preserve by a conservative course the enormous general interests involved, both from the standpoint of the business interests of the country and the large invested capital in railway property, rather than hazard them in attempts at retaliation. Its earnings will not suffer in the meantime. The volume of the new Philadelphia traffic is most gratifying, and more than compensates for the loss at New York, at which point resumption will not be long delayed.

The intimation is given that the Baltimore & Ohio may not resume New York freight traffic until its line is completed to a junction with the Reading, when a permanent route is promised. It is expected this work will be completed in October. A local passenger train was, on Aug. 23, put on the new line between Baltimore and Wilmington, which will be shortly extended to Philadelphia.

Boston, Winthrop & Shore.—At a meeting held last week the stockholders voted to authorize the issue of \$150,000 new stock for the purpose of building a branch through the center of the town of Winthrop, Mass.; also to authorize the issue of \$325,000 bonds for the purpose of funding floating debt and additions to property.

Central of Georgia.—There has lately been a considerable movement in the stock of this company and large purchases are reported to have been made. The parties buying are unknown except to their brokers, and the report is that an effort is being made to secure a controlling interest for the Louisville & Nashville Co., or rather for the parties who control that company. The result will probably not be fully known until the annual meeting in January next.

Chicago, Burlington & Northern.—Freight trains began to run over this road Aug. 23, and through freight will be taken between Chicago and St. Paul. Some local passenger business will be done by mixed trains, but through passenger trains will not begin to run until Oct. 1.

At a meeting held in Boston, Aug. 20, the directors voted to issue \$2,000,000 in 6 per cent. debenture bonds, having 10 years to run. These bonds will be used, as heretofore reported, for the purpose of funding the floating debt incurred in construction, purchasing additional equipment and building short branches into several cities near the line. No arrangements have yet been made for marketing these bonds, but it is said that half the amount will be put out in November.

Chicago, Burlington & Quincy.—On the extension of the Grand Island Branch of this company's Burlington & Missouri River line, track is reported laid to Broken Bow, in Custer County, Neb., 80 miles westward from Grand Island. Trains will shortly run through to the new terminus.

Chicago & Northwestern.—Work is to be begun shortly on a branch or extension of this road from Janesville, Wis., to Evansville. The line is intended as a cut-off to shorten the distance between Chicago and St. Paul.

Concord.—The Boston Advertiser of Aug. 21 says: "The question as to whether it is the most advisable to declare an extra dividend or to double the capital stock of the company was informally discussed by some of the largest stockholders of the Concord (N. H.) Railroad at Concord on Tuesday. Under the law, dividends to the amount of 10 per cent. can be paid annually, while the state can claim any surplus net earnings above that sum. It appears that since the corporation commenced operations the aggregate dividends have fallen 36 per cent. below what the state permits, and consequently an extra of 36 per cent. can now lawfully be declared. The capital stock is only \$1,500,000, while the property of the road is worth over \$3,000,000, which would admit of a stock dividend of 100 per cent. if that should be preferred to an extra in cash. While the par value of the stock is but \$50 per share, it is difficult to purchase any of it at \$107."

Detroit, Lansing & Northern.—The track on this company's Saginaw & Western line is now completed to Howard City, Mich., the junction of the main line and the Grand Rapids & Indiana road, 11 miles westward from the old terminus at Lake View, and 81 miles from East Saginaw. Regular trains began running this week.

East Tennessee, Virginia & Georgia.—The Reorganization Committee last week gave notice that Central Trust Co. certificates and stamped stock certificates would be exchangeable on and after Friday, Aug. 20, for the securities of the new East Tennessee, Virginia & Georgia Railroad Co., in accordance with the agreement of reorganization. The assessment of 5 per cent. on income bond certificates became due and payable on the same day.

Escambia.—This company has been incorporated to build a railroad from Pensacola, Fla., to Selma, Ala., the principal object of the projectors being to reach new lumber districts.

Green Bay & Great Northwestern.—This company has filed articles of incorporation to build a railroad from Green Bay, Wis., northwest to Superior City, about 200 miles.

Green Bay, Winona & St. Paul.—Reports which have been in circulation to the effect that the Chicago, Burlington & Northern Co. was negotiating for the purchase of this road have been denied by the officers of both companies, who say that no such plan has been thought of.

Gulf, Colorado & Santa Fe.—Work is progressing rapidly on the extension of this road from Fort Worth, Tex., northward to the Red River. Nearly all of the grading is completed and about 40 miles of track are laid.

Havana, Rantoul & Eastern.—The United States Circuit Court has granted a final decree of foreclosure and sale, fixing the date of sale for Oct. 27 next. The mortgage foreclosed is for \$300,000 and there is about \$80,000 overdue interest. The road was formerly a part of the Wabash system, but separate receivers were appointed some time ago. It extends from West Lebanon, Ind., west to Leroy, Ill., 76 miles.

Hudson Suspension Bridge & New England Railroad.—An attempt is on foot to revive the project of this company for a suspension bridge over the Hudson River near the lower end of the Highlands. The exact location has not been decided on, nor has the money to build the bridge and connecting lines been raised.

Illinois Central.—On the extension of the Yazoo City Branch of the Southern Division track is now laid to Greenwood, Miss., 55 miles northward from Yazoo City and 100 miles from the main line at Jackson.

A branch has also been completed from this line at Tehula, Miss., east by north to Lexington, 13 miles. At Lexington this branch connects with the branch line to Durant on the main line of the Southern Division, forming a connection 25½ miles long from Tehula to Durant.

Indiana, Bloomington & Western.—The United States Circuit Court has ordered the receiver to continue to operate the Cincinnati, Sandusky & Cleveland road and to pay to the lessor company \$25,000 per month on account of the rental. These rental payments are to begin from June 1 last and are to be continued until further order of the Court. The case in relation to the rental will probably be heard at the September term.

Indiana, Illinois & Iowa.—Work has been begun for the extension of this road from its present terminus at North Judson, Ind., eastward to a connection with the New York, Chicago & St. Paul at Knox, Ind. A contract has been let for the grading.

Indian Spring & Floyville.—A narrow-gauge road is to be built from Floyville, Ga., on the East Tennessee, Virginia & Georgia road, to Indian Spring, which is quite a summer resort for this section. The distance will be 2½ miles only and the road will be intended chiefly for passenger traffic.

Kanawha & Ohio.—This company (formerly the River Division of the Ohio Central) has concluded a contract for the use by its trains of the tracks of the Columbus, Hocking Valley & Toledo road from Gallipolis, O., to Pomeroy, and also from the junction of the two roads into Athens, O. The contract includes the use of the yards and terminal facilities in Pomeroy and also in Athens.

Kansas City, Memphis & Birmingham.—Later dispatches report that this company agrees to pay for the Memphis, Birmingham & Atlantic \$15,000 per mile for the section from Memphis to Holly Springs and \$16,500 per mile for the line from Holly Springs to Tupelo, the Memphis, Birmingham & Atlantic Co. to finish the road before it is transferred to the purchaser. It is expected that the line will be finished about Sept. 1 next.

Kentucky Union.—Negotiations are pending for the sale of this road to a party of Scotch capitalists, who promise to extend it eastward to Pound Gap on the Virginia line. The road is now in operation from Union Junction on the Chesapeake & Ohio road to Clay City, Ky., 15 miles.

Lake Shore & Michigan Southern.—The statement to the New York Commission for the quarter ending June 30 is as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Earnings	\$3,426,529	\$3,350,132	I. \$76,397	5.4
Expenses	2,144,005	2,178,303	D. 34,298	1.5
Net earnings	\$1,281,524	\$1,071,829	I. \$210,695	19.6
Other income	45,904	.....	I. 45,904	.....
Total	\$1,327,428	\$1,071,829	I. \$255,599	23.9
Int., rentals, etc.	1,094,253	1,085,132	I. 9,121	0.8
Surplus	\$233,175	\$13,303	I. \$249,878	.....

* Deficit.
The surplus this year was equivalent to 0.47 per cent. upon the stock for the quarter.

Little Rock, Fort Smith & Texas.—This company has filed articles of incorporation to build a railroad from Little Rock, Ark., westward to Hackett City in Sebastian County near the western line of the state. The distance is about 150 miles.

Liverpool Coal.—This company has filed articles of incorporation in Illinois to build a railroad from a point on the Chicago, Burlington & Quincy in Fulton County to Liverpool in the same county, a distance of 10 miles. The road is intended to carry coal from the mines at Liverpool.

Maine Central.—The statement for June and the half-year to June 30 is as follows:

	June.	1885.	Six months.	1885.
Earnings	\$265,101	\$247,865	\$1,363,258	\$1,293,707
Expenses	149,824	151,343	880,158	844,412
Net earnings	\$115,277	\$96,522	\$483,100	\$449,295

For the half-year the gross earnings increased \$89,551, or 5.4 per cent., and the expenses \$35,748, or 4.3 per cent., leaving a gain of \$33,805, or 9.5 per cent., in net earnings.

Marietta & North Georgia.—Track is now laid to the Toccoa River, 32 miles beyond Ellijay, Ga., and 102 miles from the southern terminus at Marietta. The grading is nearly all completed to Murphy, N. C., 22 miles beyond the end of the track.

Marin & Napa.—This company has been organized to build a branch of the San Francisco & North Pacific road from a point near Pacheco, Marin County, Cal., eastward to a point on the California Pacific near Sausalito in Napa County. The distance is about 22 miles.

Memphis, Arkansas & Kansas.—This company has been incorporated to build a railroad from a point on the Mississippi River opposite Memphis, Tenn., eastward to a point in Carroll County, Ark. The distance is about 250 miles. The incorporators include several gentlemen who are largely interested in the East Tennessee, Virginia & Georgia road. The projected line is apparently intended to parallel the Memphis & Little Rock and to run from Little Rock northwest to a point on the Missouri line near the northwestern corner of the state, the intentions probably being to extend the road through southwestern Missouri into Kansas.

Mexican Railroad Notes.—The following notes are from the Mexican Financier of Aug. 14:
It is reported that Mr. Delfin Sanchez has transferred his

interest in the Tehuantepec Railroad to Mr. Salvador Malo, who will push the construction of the road to completion.

Excellent crops of corn have been grown this year along the northern division of the National road, and considerable inquiry is being made by Mexican hacendados regarding the grain market in Texas.

Freight traffic on the Tampico Division of the Central Railroad is improving, and heavy wagon trains are going up to San Luis Potosi from the end of the track. There can be no question of the profitability of the Tampico Division when completed through to the ancient centre of Northern Mexican trade.

Coke made from Pecos coal is likely to form an important article of freighting on the northern division of the National Railroad, as it will prove valuable to miners in the reduction of ores mined along the railway. Indeed, it is thought that with cheap coke ores now found unprofitable to mine will pay a fair profit.

Michigan & Ohio.—The United States Circuit Court has granted a final order of foreclosure and sale against this road and has appointed a special master with instructions to sell the road, after advertising for 60 days.

The committee appointed at the bondholders' meeting last week has presented a plan of reorganization providing for the issue of stock for the present bonds as soon as the sale of the road is made and a new company organized, and for the issue of bonds at the rate of \$8,000 per mile for the purpose of building the proposed branch from Marshall northward into the lumber regions.

Minneapolis, Sault Ste. Marie & Atlantic.—This company announces the opening of 26½ miles of new road, extending eastward from the late terminus. The new stations, with their distances from Turtle Lake, Wis., the western terminus of the road, are: Ingram, 68.6; Hawkins, 73.6; Villard, 83; Prentice, 95 miles. Tracklaying is in progress east of Prentice, and it is expected that the road will be in operation from Turtle Lake to the crossing of the Milwaukee, Lake Shore & Western at Rhinelander by about Nov. 1 next.

Mobile & West Alabama.—Notice is given that proposals will be received by W. M. Patton, Chief Engineer of this road, at his office in Mobile, until Aug. 31, for repairing the roadbed of the old Mobile & Alabama Grand Trunk from Mobile to the Tombigbee River, a distance of 57 miles. The work required includes clearing, surfacing, ditching, rebuilding, trestles and bridges, furnishing cross ties and laying the rails. Bids will also be received until the same date for building a bridge across the Tombigbee River, including foundations, masonry and superstructure. The piers are to be of brick and the superstructure of iron and steel. The total length of the bridge will be 825 feet. Plans and specifications can be seen at the office as above.

Montana Union.—Mr. Charles Blackwell, Acting General Manager, has issued the following circular:

"1. The Montana Union Railway embraces the following demised portions of the Utah & Northern and the Montana railways: Silver Bow to Butte, and to the mines, smelters and other industries; Silver Bow to Garrison; Stuart to Anaconda, and to the smelters, concentrators and other industries; with the appurtenances, ways, rights of way, grounds, buildings, structures and everything belonging thereto or connected therewith, except rolling stock.

"2. All agents and other employees of the Union Pacific Railway and the Northern Pacific Railroad companies, on that portion of the line now embraced by the Montana Union Railway, will, until otherwise notified, be considered employees of this company.

"3. All Union Pacific Railway rates and tariffs, in force on July 31, 1886, between points on the Montana Union Railway, will remain unchanged until further orders.

"4. Commencing Aug. 1, the agents of the Montana Union Railway will act as joint agents for the Union Pacific Railway Co., the Northern Pacific Railroad Co., and this company.

"5. All freight business to and from points on the Union Pacific Railway from and to points on the Montana Union Railway, will be reported as heretofore, to D. D. Davis, Freight Auditor, Omaha. Remittances to be made as heretofore.

"6. All freight business to and from points on the Northern Pacific Railroad from and to points on the Montana Union Railway, will be reported to E. H. C. Taylor, Auditor Freight Receipts, St. Paul, Minn. Remittances to be made to G. S. Baxter, Assistant Treasurer, St. Paul, Minn.

"7. Montana Union Railway local business will, until new blanks are supplied, be reported on Union Pacific Railway blanks, to Acting General Manager's office, at Butte, and remittances will also be made to same.

"8. Ticket business will be done and reported as heretofore, until further notice.

"9. Traveling auditors of the Northern Pacific and the Union Pacific companies, will visit agents at once and instruct as to duties.

"10. Conductors will continue to report train collections and to make remittances as heretofore, sending duplicate report, also copy of pass report, to Acting General Manager's office.

"11. All time rolls and rent rolls to be sent to Acting Trainmaster's office, Silver Bow, on the first day of each month.

"12. Reports of coal taken by engines will be made on first day of each month to Acting Master Mechanic, Butte, with engineers' tickets inclosed.

"13. Requisitions for agents' stationery will be made on the Acting General Manager's office; requisitions for other station agents' supplies will be made on Acting Trainmaster's office. Requisitions for conductors' supplies will be made on the Acting Trainmaster's office, Silver Bow.

"14. The sale of company's coal, by agents to employees, will be strictly on cash basis, and will be reported monthly to Acting General Manager's office, and the revenue derived therefrom will be carried into the regular station account and reported on monthly balance sheet, and the rates for sale thereof now in force will be continued until further notice.

"15. All agents will notify the Acting General Manager's office at once of any garnishments that may be made on employees.

"16. Impression copies of Union Pacific and Northern Pacific Railroad billing to pool points will be sent to freight auditors of both companies.

"17. Over, short and loss, and damage business, so far as it affects freight to and from the Union Pacific Railway, will be reported as heretofore to L. A. Saunders, A. F. C. A., Salt Lake City. Similar business, so far as it affects the Northern Pacific Railroad, will be reported to J. M. Hannaford, Traffic Manager, St. Paul, Minn.

"18. Duplicate reports of ticket sales, and impression copies of all way bills and abstracts of freight, will be sent to the Acting General Manager's office.

"19. Reports and remittances on account of telegraph business will be made as heretofore.

"20. Baggage men will report baggage and checks, as heretofore, to A. Traynor, General Baggage Agent Union Pacific Railway, Omaha, and train baggage men will send copies of trip reports to the Acting General Manager's office.

"21. Annual passes issued by the Northern Pacific Rail-

road Co., and good between all stations, will be honored on the Montana Union Railway; also, Union Pacific annual passes covering that portion of the railway now embraced by the Montana Union Railway."

Nashville, Chattanooga & St. Louis.—This company's statement for July, the first month of the fiscal year, is as follows:

	1886.	1885.	Increase.	P. c.
Earnings.....	\$215,256	\$165,067	\$49,589	29.9
Expenses.....	122,570	97,543	25,027	25.5
Net earnings.....	\$92,686	\$68,681	\$24,565	36.1
Interest and taxes.....	8,233	55,900	2,333	4.2
Improvements.....	7,820	5,091	2,729	53.5
Total charges.....	\$66,053	\$60,991	\$5,062	8.3
Surplus.....	\$26,633	\$7,130	\$19,503	273.6

The earnings show a marked improvement. The mileage worked was the same, 580 miles, in each year.

New York, Lake Erie & Western.—This company has opened a stone quarry on the line of its road at Callicoon and has placed machinery there for crushing stone for ballast. This stone is at present being used for stone ballasting the tracks of the Eastern Division, and the work is to be continued gradually until the whole line is thus ballasted.

The company has been for some years paying special attention to the development of the local passenger business, especially the suburban business out of New York. The result has been a very considerable increase both in regular suburban and transient travel, and the summer business this year is larger than ever before. The excursion business to Shohola Glen, and other points of interest on the line of the road, has also been very large this season, so that every available car has been in use.

The statement for July, and the ten months of the fiscal year from Oct. 1 to July 31 is as follows, the figures including 68 per cent. of the gross earnings and all the working expenses of the leased New York, Pennsylvania & Ohio road:

	July.	1885.	1886.	1887.
Earnings.....	\$1,865,363	\$1,561,721	\$1,828,476	\$1,561,450
Expenses.....	1,378,402	1,191,166	1,293,448	1,185,448
Net earnings.....	\$486,961	\$370,555	\$535,028	\$375,999

For the ten months the gross earnings increased \$2,847,026, or 18.5 per cent., and the expenses \$1,144,000, or 9.6 per cent., leaving a gain of \$1,703,026, or 48.6 per cent., in net earnings.

The earnings of the Erie lines proper, excluding all earnings and expenses of the leased road, were as follows:

	July.	1885.	1886.	1887.
Earnings.....	\$1,596,194	\$1,308,170	\$1,482,292	\$1,247,732
Expenses.....	1,023,171	878,778	9,089,539	8,865,710
Net earnings.....	\$573,023	\$429,401	\$513,753	\$382,022

Here there is shown for the ten months an increase in gross earnings of \$2,272,560, or 18.1 per cent.; an increase in expenses of \$823,829, or 9.3 per cent., and an increase in net earnings of \$1,448,731, or 39.3 per cent.

The 68 per cent. of the gross earnings of the leased road for the ten months of this year amounted to \$2,388,184, and its working expenses to \$3,309,909, leaving a profit on the lease of \$78,275, against a loss of \$176,020 last year.

New York, Woodhwy & Rockaway.—It is reported that a controlling interest has been sold to Austin Corbin and others connected with the Long Island road, and that the road will be operated by that company. It extends from Glendale Junction, N. Y., on the Long Island road, to Rockaway Beach, 10½ miles.

Northern Central.—This company's statement for July and the seven months to July 31 is as follows:

	July.	1885.	1886.	1887.
Earnings.....	\$449,460	\$411,722	\$3,031,861	\$3,069,494
Expenses.....	327,703	300,659	2,010,724	1,855,356
Net earnings.....	\$121,757	\$111,063	\$1,021,137	\$1,214,138

For the seven months the gross earnings increased \$22,867, or 0.7 per cent., and the expenses \$155,468, or 8.4 per cent., the result being a decrease of \$133,101, or 11.5 per cent. in net earnings.

Northern Pacific.—Arrangements having been completed for the use by this company of the Montana Union road, as noted elsewhere, this company has put on a through sleeping car to run between St. Paul and Butte, Montana, without change.

Oregon Railway & Navigation Co.—The Portland Oregonian says: "As soon as a railroad bridge can be built across the Willamette River, the Oregon Railway & Navigation Co. will run its trains into Portland. A bridge will be built. Ever since the conference between the Board of Trade committee on one side and President Smith of the Oregon Railway & Navigation Co., and President Harris, of the Northern Pacific on the other, on the question of terminal facilities, the matter has been carefully canvassed, and it has now assumed definite shape. Mr. George R. Morison, the well-known bridge engineer, was telegraphed for and will arrive here late this week or early next week. He is somewhat familiar with the features of the Willamette River, having been connected with the Northern Pacific when that company prepared plans and commenced construction of a bridge at Albina a few years ago. It is not likely that the O. R. & N. will cross the river below Ainsworth wharf. Of course, the objective point is Couch Lake, or the ground south of it. The river is narrowest about the centre of Ainsworth wharf, but if a bridge were built there it would necessitate cutting down the embankment on the east side so that trains could swing on to the bridge. The question as to whether a franchise from the Legislature or from Congress will be necessary, has not yet been passed on by the attorneys of the company, but no doubt whatever legal authority is demanded will be granted. The bridge will be used for railroad traffic only, though perhaps there will be a path for foot passengers."

Paris & Decatur.—Messrs. Simon Borg and others, forming the bondholders' committee, give notice that bondholders desiring to participate in the reorganization of this company are requested to sign the bondholders' agreement and deposit their bonds and unpaid coupons forthwith with the Union Trust Co., of New York. The sale being fixed for Sept. 30, immediate action is required. The committee reserves the right to decline to receive bonds at any time without notice. The plan of reorganization proposes that holders of bonds assenting thereto shall receive for each \$500 bond, carrying the January, 1876, and all subsequent coupons, \$500 in preferred and \$500 in common stock. Junior creditors and stockholders, by paying 10 per cent. assessment, can take new common stock for their present holdings. The road now forms part of the Illinois Midland.

Pennsylvania.—This company's statement for July shows for all lines east of Pittsburgh and Erie, as compared with July, 1885, an increase of \$671,572 in gross earnings;

an increase of \$250,993 in expenses, and an increase of \$420,579 in net earnings. For the seven months to July 31, as compared with the corresponding period last year, the same lines show an increase of \$2,602,143 in gross earnings; an increase of \$1,031,799 in expenses; and an increase of \$1,570,344 in net earnings.

Carrying out these differences, we have the following statement:

	July.	1885.	1886.	1887.
Earnings.....	\$4,356,677	\$3,685,105	\$27,606,844	\$25,004,701
Expenses.....	2,776,049	2,525,056	18,356,590	17,324,791
Net earnings.....	\$1,580,628	\$1,160,049	\$9,250,254	\$7,679,910
Per ct. of exps..	63.7	68.5	66.5	69.3

All lines west of Pittsburgh and Erie for the seven months of 1886 show a deficiency in meeting all liabilities of \$413,877, being a decreased deficiency, as compared with the same period of 1885, of \$610,321. The total net gain on all lines is thus \$2,180,665 for the seven months.

Poughkeepsie Bridge.—The Poughkeepsie (N. Y.) Eagle of Aug. 24 says: "We are glad to be able to state to the readers of the Eagle that the negotiations which have been in progress so long, for the revival of the great enterprise in bridging the Hudson at this place, have been brought to a conclusion, and that responsible and able parties have come forward who agree to furnish the necessary funds and to begin and carry forward the work of construction to a speedy completion."

An adjourned meeting of the directors of the Poughkeepsie Bridge Co. was held in New York on Monday, at which the decisive action was taken, and a contract with a newly-formed construction company, known as the Manhattan Bridge Building Co., was entered into. As has been generally understood, the old American Bridge Co., after its failure, assigned its contract and the property, machinery and interests here, to a corporation known as the Union Bridge & Construction Co., and the latter made a new contract, by which the stock and bonds of the Poughkeepsie Bridge Co., not issued or subscribed for, were to be turned over to it, and it was to undertake the raising of money and the building of the bridge.

At the meeting on Monday it was announced that new parties had been induced to take an interest in the matter, and had associated themselves under the title of the Manhattan Bridge Building Co.; that a transfer of the interests of the Union Bridge & Construction Co. to it had been made, subject to the ratification of the Poughkeepsie Bridge Co., and that they were ready to take the contract, with some modifications, made necessary by the changed condition of affairs, and to build the bridge in accordance with plans and specifications that were submitted, without delay. The proposed changes were considered at length and were agreed to by unanimous vote, and the President and Secretary were authorized and directed to execute the new contract.

The Manhattan Bridge Building Co. is a corporation formed in the state of New Jersey, at the head of which are capitalists from Philadelphia and elsewhere. By the terms of its contract it is to begin work on the bridge at once and to complete it before 14 months, or before the end of the year 1887.

The specifications call for a structure in some respects different from that heretofore contemplated. The piers, instead of being entirely of masonry, will be carried up only to 30 ft. above high water, and above that will be steel towers. There will be five great spans, 525 ft. long, three of which—the two nearest the shores, and the one in the centre—will be trusses, and the other two cantilevers. The lower chord will be 135 ft. above high water, and the track on the top 200 ft. above the same. The bridge proper will be of steel, and the viaduct on land of iron. It is expected that the work will be done by the Union Bridge Co."

Nothing has been made public as to the parties who form the Manhattan Bridge Building Co., and until this is known very little can be said concerning the real prospects of the project.

Pullman's Palace Car Co.—A Wilmington dispatch says that this company has purchased the shops and plant of the Dure Car Manufacturing Co., in Wilmington, Del., and will establish its Eastern repair shops at that point, removing there the work heretofore done at Elmira, West Philadelphia and other points. The price paid for the property was \$55,000. Besides the shops, it includes 19 acres of land situated between the Delaware River and the Philadelphia, Wilmington & Baltimore tracks.

Rome, Watertown & Ogdensburg.—The statement to the New York Commission for the quarter ending June 30 is as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Earnings.....	\$658,098	\$418,913	I. \$239,185	57.1
Expenses.....	411,301	271,914	I. 139,387	51.2
Net earnings.....	\$246,797	\$146,999	I. \$99,798	67.9
Other income.....	7,228	6,498	I. 730	1.1
Total.....	\$254,025	\$153,497	I. \$100,528	65.7
Charges.....	223,314	157,509	I. 65,805	41.7
Surplus.....	\$30,711	\$4,012	I. \$26,723	667.8

* Deficit.

The statement for this year includes the operations of the Utica & Black River road, leased by this company from April last.

St. Louis & San Francisco.—Contracts have been let for all the grading of this company's extension from Fort Smith, Ark., southward to the Red River. The Pruyn-Bambrick Construction Co., of St. Louis, has 47 miles northward from the Red River, and the grading of the remainder will be done by McLeod & Parks, of Fort Smith. The trestle-work and piling has been let to Mr. R. Grimes, of St. Louis. A considerable force has already been put upon the work by the contractors.

The line from the Red River to Paris is built by the Paris & Great Northern Co., a Texas organization. The grading on this section is now well advanced, and work is also in progress on the masonry of the Red River bridge.

San Antonio & Aransas Pass.—Work has been begun on the grading of the northwestern extension of this road. The section now under contract extends from San Antonio, Tex., to Kerrville, about 70 miles, and the work is to be pushed as fast as possible.

Sea Beach & Sheephead Bay.—This company has been organized to build a branch from the New York & Sea Beach road near the Coney Island terminus to Gravesend avenue. The proposed road will be only about half a mile long.

Sonora.—The statement for June and the half-year to June 30 is as follows:

	June.	1885.	1886.	1887.
Earnings.....	\$22,216	\$22,382	\$142,489	\$149,510
Expenses.....	17,822	18,586	114,633	117,930
Net earnings.....	\$4,394	\$3,796	\$27,856	\$31,580

The earnings are in Mexican currency. The road is owned by the Atchison, Topeka & Santa Fe.

Southern Central.—The statement for the quarter ending June 30 is as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Earnings.....	\$120,678	\$107,478	I. \$13,200	12.3
Expenses.....	113,326	134,949	D. 21,623	16.0
Net earnings.....	\$7,352	\$-7,471	I. \$14,823	199.8
Charges.....	46,551	45,080	I. 1,471	3.3
Deficit.....	\$39,199	\$72,551	D. \$33,352	46.0

* Deficit.

This road is controlled by the Lehigh Valley Co., forming an extension of its lines to Lake Ontario.

Southern Pacific Co.—This company's statement for the half-year to June 30 is as follows:

	Atlantic System.	Pacific System.	Total.
Earnings.....	\$4,022,258	\$10,738,108	\$14,758,366
Expenses.....	3,176,543	5,319,767	8,496,310
Net earnings.....	\$845,715	\$5,518,341	\$6,364,056
Add rental of leased lines.....			\$280,082
Total net income.....			\$6,644,138
Fixed charges.....			\$6,777,016
Construction and improvements.....			164,863
Deficit for the half-year.....			\$690,743

Fixed charges include taxes, interest, rentals and government dues. As compared with last year, the total gross earnings increased \$716,308, or 5.1 per cent., but the net earnings decreased \$434,612, or 6.6 per cent.

Terre Haute & Indianapolis.—This company has just completed an extension of its South Branch coal road from Brazil, Ind., southeast to Centre Point, a distance of 10 miles. This extension reaches large deposits of block coal, which have been mined to some extent, but which have heretofore lacked shipping facilities. An extension of this branch from Centre Point to Saline City, 6 miles, would connect the branch with the Evansville & Indianapolis road.

Texas & Pacific.—The United Wistar-Fleming Committee have issued a notice that Sept. 3 next has been fixed as the date for the final deposit of bonds under the modified plan of reorganization. After that date bonds will be received only on terms to be fixed by the committee.

The holders of income and land grant mortgage bonds are invited by the committee, consisting of Messrs. Simeon J. Drake, Christopher Meyer, W. C. Hall, Charles J. Canda and William Strauss, to deposit their bonds with the Central Trust Co., in New York, in order to unite in securing a recognition of their rights. This committee evidently considers that the income bondholders do not meet with proper consideration in the revised plan of reorganization.

Still another committee, consisting of Messrs. M. Burr, Jr., Henry Clews and John Bloodgood, invites the stockholders of the company to join them in fighting all the plans of reorganization proposed. This committee holds that the rights of the stockholders are entirely ignored, and that the condition of the road and its prospects are very much better than the statement of the bondholders' committee would lead outsiders to believe.

Union Pacific.—A Boston dispatch of Aug. 25 says: "The Union Pacific Co., yesterday paid the last note standing against it and is now entirely out of floating debt. When Mr. Adams became President in June, 1884, bills and accounts payable amounted to \$9,700,000 and the courts decided that \$916,000 in addition was due to the Government, making the total floating debt \$10,616,000 on June 30, 1884. The company has thus in a little over two years, paid off all its floating debt. This has been accomplished by three methods: First, the surplus income in 1885 was \$2,500,000; second, Kansas Pacific consols, and Oregon Short Line bonds have been sold, but no addition to fixed charges is made on this account, as the amount of the Kansas Pacific consols outstanding was decreased \$1,022,000 in 1885, this being accomplished by the application of the proceeds of land sales; third, by the sale of assets, principally St. Joseph & Grand Island bonds."

Wabash, St. Louis & Pacific.—As noted briefly last week, the purchasing committee accept the proposed modifications of the original propositions, and will carry them out as soon as the requisite number of bondholders have signed the agreement.

The modifications provided for the payment of one of the overdue coupons in cash and the funding of two, instead of three as originally proposed; and it is also agreed that as soon as it can be done, legally, the new company will execute a blanket mortgage covering all of the main lines of the company both sides of the Mississippi River, taking precedence of the new debenture mortgage, and into this will give the holders of all the divisional bonds the option of converting their bonds or of retaining them in their present shape, extended 40 years, with new sheets of coupons. Under the new mortgage each of the old mortgages will retain its present order of rank, with the additional advantage of covering all the main lines, instead of sections, as before. The old bonds, when exchanged, will be held by trustees, uncanceled until all or nearly all have been exchanged, so that each mortgage will keep its present security intact until the process of conversion shall have been substantially accomplished. Meantime the old bonds will be extended at a uniform rate of 5 per cent., with new sheets of coupons, and the holders can elect whether to make the exchange or not as soon as the new mortgage and the bonds to be issued thereunder are ready.

As soon as a majority of the outstanding bonds on all main line mortgages east of the Mississippi have been signed for by the holders, the Purchasing Committee will, if possible, arrange to have the one coupon cashed at its face value, and also provide for the payment of the first coupon of 2½ per cent. under the reduced rate of interest. Assenting bondholders will thus be entitled to:

1. Cash for the overdue coupon of longest date, and also for the first coupon of the extended bonds at the reduced rate.
2. Coupon bonds or scrip bearing 5 per cent. interest for the two overdue coupons to be funded.
3. New sheets of coupons of the new company for the extended time (40 years), payable semi-annually, at the rate of 5 per cent. per annum.
4. Holders of all mortgage bonds on the main lines, senior to the new debenture mortgage, will have the option of exchanging existing bonds for those of the blanket mortgage, as soon as that instrument can be prepared and executed.

The time of payment of the coupons, as stated in the first proposition, will of course depend upon the assent of the bondholders. If an early adjustment is considered desirable, the bondholders must sign the agreement of assent promptly.

Wichita & Winfield.—This company has been organized to build a railroad from Wichita, Kan., southwest to Winfield.

Wisconsin Central.—Work has already been begun on a branch which is to run from the main line near Penokee, Wis., to Bessemer. At Bessemer is located the Culby iron mine, which is owned by parties largely interested in this road. These same parties also own some large tracts of mineral land on the Penokee and Gogebic iron ranges, which they are seeking to develop.